
Pilot Project on OSHA External Regulation of DOE Facilities

**Oak Ridge National Laboratory and
East Tennessee Technology Park**

CORE GROUP REPORT

January 1999

EXECUTIVE SUMMARY

In May 1993, the Secretary of Energy announced that the Department of Energy (DOE) would seek transition to external regulation of worker safety and health by the Occupational Safety and Health Administration (OSHA). DOE and OSHA entered into a Memorandum of Understanding (MOU) in June 1995 to evaluate the possible transition from internal DOE oversight of occupational safety and health matters involving private-sector employees at DOE government-owned, contractor-operated (GOCO) facilities to external enforcement by OSHA. This MOU resulted in several activities, including an independent study by the National Academy of Public Administration (NAPA) and an earlier pilot project at Argonne National Laboratory-East (ANL-E).

The previous pilot at Argonne provided initial data for review by DOE and OSHA concerning external regulation at a site that was energy-research oriented. However, ANL-E did not have large amounts of radioactive material onsite, was not engaged in major cleanup activity, and had only one prime contractor managing and operating the site. So, DOE and OSHA planned an additional pilot at two major DOE facilities in Oak Ridge, Tennessee: the East Tennessee Technology Park (ETTP) and the Oak Ridge National Laboratory (ORNL). This additional pilot would permit further evaluation of OSHA regulatory activities at large, multi-employer worksites where a variety of topics could be addressed (e.g., construction, environmental cleanup, decontamination and decommissioning, work with radioactive materials, privatization of federal facilities, and interactions with labor unions).

A work plan for the Oak Ridge pilot was developed by a Pilot Project Core Group, consisting of representatives from DOE, OSHA, contractors, and labor representatives. The Core Group was responsible for facilitating the conduct and evaluation of the pilot, which was conducted from June through August 1998. The pilot focused on five key objectives, concerning:

- worker protection standards and hazard identification, correction, and abatement;
- safety and health program evaluation;
- evaluation of the OSHA-Nuclear Regulatory Commission (NRC) interface;
- inspection procedures and protocols; and
- engaging and informing site personnel about OSHA external regulation.

In a separate effort, conducted in parallel with the pilot, the team members evaluated the impact on OSHA and the Tennessee Occupational Safety and Health Administration (TOSHA) of current and future privatization efforts at DOE facilities.

The Core Group concluded that the pilot successfully met its objectives by providing:

- a site and initial forum to examine interface issues between the Nuclear Regulatory Commission (NRC) and OSHA.

- OSHA access to a DOE GOCO that is highly varied in function and mission and that is currently undergoing a dynamic change to reflect DOE's current contracting approaches.
- an introduction of DOE and its contractors to full-scale enforcement efforts by OSHA (the Argonne Pilot was mainly a health and safety program evaluation).

The following is a summary of the Core Group's observations and issues that should be addressed under a DOE transition to OSHA regulation:

Standards and Regulations

- DOE's Work Smart Standards (WSS) process is encouraging as a tool to focus and direct resources at the most significant hazards first; however, WSS is an adjunct to formal regulation, not a substitute, and OSHA would still expect contractors to comply with the full spectrum of OSHA standards which have been developed through statutorily based rulemaking to address significant risks that have feasible solutions. (Section 3.1.1.2)
- OSHA's current occupational radiation protection standard (29 CFR 1910.1096) does not provide protection equal to that afforded by DOE's and NRC's current radiation standards (10 CFR 835 and 10 CFR 20, respectively). This was confirmed by a regulatory gap analysis performed by OSHA, which indicated that both NRC's and DOE's rules offered greater radiation-related protection in worker safety. To ensure equivalent regulatory protection under external regulation, OSHA would need to update its radiation protection standard, or have legislation to adopt the DOE or NRC standards for OSHA enforcement at DOE sites. (Section 3.1.1.3)
- OSHA may need to review its HAZWOPER standard (29 CFR 1910.120) to ensure that, under external regulation, there would be no gap in safety and health coverage at DOE treatment, storage, and disposal facilities. During development of the HAZWOPER regulation in the 1980s, OSHA did not include radiation as a significant hazard at the commercial TSDs that would be regulated. (Section 3.1.1.3)
- OSHA does not have a standard covering firearms and explosives safety. OSHA may need to undertake rulemaking to develop its own regulation for firearms and explosives; such a rule could be based on modifying DOE's existing manuals and standards in these areas. (Section 3.1.1.3)
- DOE and its contractors at the Oak Ridge complex generally provide more extensive health and safety training than is presently stipulated by OSHA. (Section 3.1.1.3)

Compliance Issues

- The majority of violations discovered by OSHA during the simulated inspections were the

result of differing local interpretations or unawareness of the specifics of regulations--not the result of a disregard or complete unfamiliarity with the regulations. (Section 3.1.2.1)

- OSHA generally agrees with DOE's approach and response to formal requests for variances and interpretation of OSHA standards. However, OSHA will evaluate each situation on a case-by-case basis, and on-site inspections related to an interpretation may result in citable violations. (Section 3.1.2.2)

Simulated Citations and Related Costs

- During the simulated OSHA inspection, 75 alleged violations were identified, with 54 being classified as serious. This 72% serious rate is higher than the 66% serious rate found on average by OSHA. (Section 3.1.3.3)
- The total simulated initial penalties associated with the simulated citations issued to contractors during the pilot was \$89,350 (\$46,150 for the ORNL site and \$43,200 for the ETTP site); OSHA agreed to overall penalty reductions of \$21,325 or approximately 24 percent from the original amount based on information presented by contractors during the informal conferences. After reductions, the total was \$68,025. (Sections 3.1.3.3 and 3.1.3.4)
- Under the OSH Act, OSHA cannot assess monetary penalties against federal agencies such as DOE, although OSHA has expressed interest in seeking legislation that would allow it to do so. OSHA did not issue citations or penalties to DOE as part of this Pilot Project. However, OSHA did use this opportunity to identify those violation items for which OSHA would have cited DOE if OSHA had such authority. The estimated penalty amounts for these citation items would, in OSHA's judgment, be roughly equal to the amount assessed against the contractors. (Sections 3.1.3.2 and 3.1.3.3)
- To prepare for the Pilot Project, OSHA participated in an orientation visit to the ORNL and ETTP sites; at that time, the Core Group selected specific facilities to be inspected later. This orientation visit gave facility managers advance notice of the upcoming inspections, which is normally prohibited by the OSH Act. When OSHA returned to inspect, it was noted that some hazards which had been observed during the orientation visit had been abated in the interim. This interim cleanup likely resulted in fewer citations than would have been issued otherwise. This highlights the importance of DOE oversight and contractor self-inspection and aggressive abatement of self-identified noncompliances when under external regulation by OSHA. (Section 3.1.3.4)
- The Oak Ridge sites use a risk prioritization method to rank hazards according to severity and probability so that available funding can be used efficiently to correct the most serious and most likely hazards first. Under OSHA enforcement, DOE and its contractors would not be able to rely on this system as designed. Rather, they would be required to provide the resources to correct the hazards quickly (within 30 to 90 days) or face the possibility of being

cited for violations classified as "Serious" or possibly "Willful" by OSHA. This finding underscores the importance of the appropriations process in assessing the impacts of external regulation. Certain actions to remedy alleged OSHA violations may require a line-item Congressional appropriation or may require funds that are not available under the current fiscal year appropriation. (Section 3.1.3.5)

- Simulated informal conferences were a valuable exercise that gave employers and employees an opportunity to gain more insight into how OSHA classifies violations. (Section 3.1.3.4)
- Since many DOE sites are large-scale operations with unique hazards as well as more traditional hazards, OSHA believes that an enhanced enforcement model will be needed under external regulation. (Section 3.1.3.7)
- For DOE and its contractors, the greatest potential cost impacts of OSHA regulation would be for abatement of previously identified hazardous workplace conditions. At ORNL, the current level of funding being spent from the landlord budget to correct the more serious noncompliances is \$257,000. Based on results of the OSHA simulated inspections and the types of violations noted, the \$4.9 million requested through the DOE Environment, Safety and Health/Infrastructure Management Plan for FY 1999 and 2000 for correcting OSHA-related deficiencies at ORNL would probably not be sufficient to bring ORNL into full compliance with OSHA regulations. (Sections 3.1.3.5 and 3.1.4.1)
- Contractor cost to accommodate simulated regulatory activities during the pilot, such as providing management escorts and liaison for simulated inspections and program evaluations, preparing for and participating in informal conferences, preparing abatement plans, and funding for actual abatement was approximately \$321,446. Some of these costs were due to the nature of the Pilot Project (such as pilot planning and report preparation) and would not be incurred under external regulation. Other costs were for the correction of existing hazards and would be incurred whether or not an OSHA inspection had taken place. (Section 3.1.4.1)
- The local labor unions (Atomic Trades and Labor Council and Oil, Chemical and Atomic Workers) are concerned that additional funding diverted to OSHA citations and other external-regulation-related expenses could reduce the amount of operating dollars, resulting in a loss of jobs. The unions are not advocating that money should take precedence over safety and health, but they recognize that DOE already has a program in place for addressing worker safety and health concerns and abating hazards on a risk prioritization basis. (Section 3.1.4.1)

Program Evaluation

- The program evaluations performed by OSHA found that ORNL and ETTP generally have good worker safety and health programs. However, the sites could improve in the following areas:
 - ETTP could improve in the area of employee involvement and needs to address

discrepancies in its recordkeeping practices (3.2.2).

- ORNL could improve in the areas of day-to-day involvement of workers in safety and health decision-making and integration of subcontractors into safety and health. Also, site injury rates at ORNL are significantly higher than the national average for industry (3.2.3 and 3.2.4).
 - Both sites need to reduce the number of uncorrected safety and health hazards, which was one of the conditions that would preclude their eligibility for participation in the Voluntary Protection Programs (VPP) at this time (3.2.4).
- OSHA believes that program evaluations would be a valuable component of their external regulation activities at DOE sites, provided that OSHA is given the necessary resources for conducting such evaluations. (Section 3.2.4)

NRC/OSHA Interface

- NRC's and OSHA's regulations overlap in four critical areas (fire safety, chemical safety, emergency response, and radiation). (Section 3.3.2)
- Under various Memoranda of Understanding (MOUs), NRC and OSHA have joint regulatory relationships (e.g., at the Portsmouth and Paducah Gaseous Diffusion Plants, private nuclear power plants, and accelerators), while States also have various regulatory roles. Future pilots should investigate the potential role for each to play in worker safety and health protection (including radiation protection) at DOE sites in order to minimize the potential for dual regulation. (Section 3.3.2)

Site Access Issues

- National security issues and site-access concerns will probably have an impact on the ability of OSHA compliance safety and health officers to perform their jobs. Areas of concern include: obtaining security clearances, having unimpeded site access, receiving the necessary and appropriate training for site access, and ensuring that classified materials are properly protected. (Section 3.4.2)
- Although there are numerous potential training requirements for obtaining unescorted access to DOE facilities, as few as three training modules (General Employee Training, Radiation Worker II, and HAZWOPER Training) would be needed for OSHA staff to enter the various work areas on the site without escort. Nevertheless, the potential exists that contractors at some DOE sites could use training requirements as a means of limiting OSHA access. (Section 3.4.5)

Communication Issues

- Future external regulation pilots and/or actual transition to external regulation could be

improved through better communication with front-line workers. Suggestions for improvement include mail-outs to workers' homes, required attendance at "all-hands" meetings, a video presentation giving additional details, bulletins that could be used as topics for tool-box safety meetings, and allowing sufficient time for communications activities. (Section 3.5.2)

Privatization Issues OSHA and DOE reviewed privatization activities and issues in parallel with external regulation pilot activities while onsite at the East Tennessee Technology Park (ETTP). This separate objective was undertaken to assist DOE and OSHA in the development of a mutually agreeable regulatory jurisdiction transfer plan for privatized facilities at DOE sites. A report of the observations and issues is contained in Section 3.6 of the report.

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1.0 Purpose of Pilot

The Department of Energy (DOE) and the Occupational Safety and Health Administration (OSHA) sponsored a pilot project at the East Tennessee Technology Park (ETTP) and Oak Ridge National Laboratory (ORNL) from June through August 1998, with follow-up activities through November 1998. The purpose of the pilot was to simulate OSHA regulatory oversight at two sites currently under DOE jurisdiction and evaluate the impact of external oversight on affected parties.

2.0 Introduction and Background

The DOE currently operates numerous facilities in support of its Congressionally mandated missions. Under existing law, DOE is currently self-regulating in the area of worker safety and health through implementation of DOE directives at most of its government-owned, contractor-operated (GOCO) facilities under authority contained in section 161(i)(3) of the Atomic Energy Act, and is exempt from OSHA external regulation under section 4(b)(1) of the Occupational Safety and Health Act. In addition, the OSH Act currently does not allow for the legal enforcement of citations or the imposition of fines or penalties on agencies of the United States government, including DOE.

Since 1993, DOE and OSHA have explored the path forward for transitioning regulation of worker safety and health from DOE to OSHA. Activities to date have included the signing of a Memorandum of Understanding (MOU) between DOE and OSHA, a study conducted by the National Academy of Public Administration (NAPA), and an initial pilot at Argonne National Laboratory-East (ANL-E). These previous efforts led OSHA and DOE to conclude that an additional pilot at another site would be beneficial. DOE's Oak Ridge Operations Office agreed to host the pilot at ORNL and ETTP.

A Core Group was established to develop the work plan for this pilot and provide overall direction during the pilot. The Core Group included representatives of DOE, OSHA, Lockheed Martin Energy Research Corporation (LMER), the Bechtel Jacobs Company LLC (BJC), MK Ferguson Company, and local labor unions, including the Atomic Trades and Labor Council (ATLC), the Oil, Chemical and Atomic Workers (OCAW), the Knoxville Building and Construction Trades Council (KBCTC), the International Guard Union of America (IGUA), and the United Plant Guard Workers of America (UPGWA).

3.0 Areas of Evaluation

The goal of the pilot was to identify issues that need to be addressed prior to a transition to OSHA external regulation of identified GOCO facilities. The Core Group's Work Plan, dated June 10, 1998, identified five objectives for the Pilot Project that were the basis for Core Group activities during the pilot. To take advantage of having a pilot at the ETTP site where major reindustrialization activities are underway, a separate objective was included in the Pilot Work

Plan to review DOE's reindustrialization activities and the issues surrounding transferring regulatory jurisdiction to OSHA. This objective and its associated Work Plan activities were carried out in parallel with the other pilot objectives. The evaluation results and subsections that follow are grouped according to the objectives of the pilot.

3.1 Objective 1 - Worker Protection Standards and Hazard Identification, Correction, and Abatement: To assess the nature and severity of the hazards present at the pilot site; determine the effectiveness of OSHA’s regulations, enforcement, training, and expertise to ensure worker protection by the employer; identify regulatory gaps; and examine the cost-effectiveness and other implications of OSHA’s abatement requirements compared with those currently used by DOE.

3.1.1 Standards and Regulations Applicable to DOE Sites – Background and Introduction

OSHA wants to ensure that the level of protection its standards provides to DOE contractors under external regulation is equal to or greater than that provided by the worker protection standards currently applied by DOE. Nevertheless, DOE has not determined that additional OSHA regulation beyond that applicable to private industry or the Department of Defense would be appropriate under external regulation. Additionally, DOE wants to assess any additional impacts that GOCO facilities currently operating under DOE orders may incur under OSHA regulation and oversight. Any gaps within existing OSHA regulations or coverage need to be minimized, and existing operations at DOE sites need to be examined to ensure OSHA applicability.

3.1.1.1 Methodology

OSHA evaluated how well its regulations cover the hazards associated with the DOE complex and whether or not OSHA’s external regulation would provide an equivalent or higher level of protection than is currently afforded under DOE self-regulation. This evaluation consisted of identification of existing DOE worker protection requirements; analysis of how well OSHA’s existing regulations cover the hazards observed by OSHA during walkthroughs and simulated inspections; OSHA evaluation of DOE interpretations and implementation of OSHA regulations; and a “gap” analysis comparing DOE requirements and OSHA regulations. In addition, various potential costs to DOE and its contractors associated with the external regulation pilot were examined and estimated.

While typical workplaces normally covered by OSHA received simulated inspections or were evaluated, defense operations and many of the nuclear processes such as the molten salt reactor experiment were not. The pilot did not incorporate all facets of ORNL or ETTP and did not include the Oak Ridge Y-12 Plant (Y-12) with the exception of a brief examination of the firing range, which is a facility located near ETTP and shared by protective force employees from all sites within the Oak Ridge complex.

3.1.1.2 Current DOE Standards and Program Requirements

By policy (currently implemented through DOE O 440.1A), DOE has adopted OSHA standards (29 CFR 1910, 1915, 1917, 1918, 1926, and 1928) to fulfill both a corporate and a regulatory

role. As with other federal agencies and private corporations, DOE found it necessary to adopt consensus standards or to develop its own worker protection requirements. The following DOE directives, technical standards, and rules are applicable to the DOE complex:

- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs®) [where more protective than OSHA permissible exposure limits (PELs)]
- American National Standards Institute (ANSI) Z 136.1, *Laser Safety*
- ANSI Z 88.2, *Respiratory Protection*
- National Fire Protection Association (NFPA) 70, *National Electrical Code (NEC)*
- NFPA 70E, *Electrical Safety Requirements for Employee Workplaces*
- DOE Manual 440.1-1, *DOE Explosives Safety Manual*
- DOE Technical Standard 1091-96, *Firearms Safety*
- Title 10 Code of Federal Regulations, Part 835 (10 CFR 835), *Radiation Protection*
- DOE Notice 440.1, *Chronic Beryllium Disease Prevention Program*
- DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*, and element-specific programmatic requirements for:
 - overall integrated safety and health programs
 - occupational medical
 - pressure safety
 - industrial hygiene
 - construction safety management
 - fire protection programs (including NFPA codes)
 - motor vehicle safety

DOE contractors, in conjunction with local DOE authorities, decide, based on an analysis of local hazards, which worker safety and health requirements to include in the contract. This DOE process of performing a hazard analysis and tailoring an appropriate set of controls (contractual) for the identified hazards is described in DOE Guide 450.3. This set of controls or requirements is called "Work Smart Standards" (WSS). As an example, during development of WSS at ORNL, four significantly different categories of work and associated hazards were identified, and subsequent planning regarding these hazards reportedly took on a more definitive, focused approach.

The WSS process is encouraging as an effort to examine the most significant hazards and all applicable regulations (including environmental, municipal, etc.) and provide documentation, direction, and evaluation in these areas. As an adjunct to OSHA regulations, it will facilitate a more focused approach to achieving compliance and could potentially increase cost-effectiveness by directing resources at the most significant hazards. It should, however, be understood that OSHA does not necessarily cover which hazard examination approach is used in determining wide-ranging regulatory issues, and OSHA would expect compliance with the full spectrum of OSHA's regulations. The WSS process could become a strategic tool to use in focusing on the most important OSHA issues first.

3.1.1.3 OSHA Standards Coverage of DOE Hazards

The Occupational Safety and Health Act (OSH Act) gives OSHA the authority to develop, implement, and enforce workplace safety and health-related standards and regulations. OSHA may require specific conditions or the adoption or use of one or more practices, means, methods or processes to protect workers on the job. These standards fall into four major categories – General Industry, Maritime, Construction, and Agriculture – addressing a wide range of hazardous working conditions. Because of limited or no activity in Agriculture and Maritime at Oak Ridge during the pilot, only the General Industry and Construction regulations were considered in the Pilot.

In addition, Section 5(a)(1) of the OSH Act, commonly known as the “general duty clause,” gives OSHA the authority to enforce compliance with consensus standards and other commonly accepted methods and procedures in the workplace. The general duty clause requires a covered employer to:

furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.

Normally, OSHA can enforce Section 5(a)(1) only in cases where an OSHA standard does not currently exist. In the DOE context, the general duty clause may allow OSHA, in the absence of its own specific standards, to provide regulatory oversight in most cases where DOE has recognized that a significant hazard can or does exist and has developed Orders to prevent death or serious physical harm to its employees.

OSHA also uses Section 5(a)(1) to enforce the requirements of consensus standards developed by organizations such as the American National Standards Institute (ANSI) and the National Fire Protection Association (NFPA). Thus, under external regulation, OSHA would expect to be able to enforce the general duty clause in addressing hazards for which DOE has adopted a consensus standard. This approach would ensure that an equivalent “safety net” for these programs will be provided under OSHA regulatory jurisdiction.

OSHA may have a more difficult time using the general duty clause in cases where DOE is proposing a rule that covers the working condition in question. For example, DOE occasionally develops special emphasis programs, such as the current one to address beryllium hazards (DOE Notice 440.1). While OSHA has been afforded some relief to enforce against its proposed new

regulations¹, it is uncertain that OSHA would be able to use Section 5(a)(1) to support enforcement of DOE's special emphasis program for beryllium or other "DOE-proposed" requirements.

In a previous, separate undertaking, OSHA conducted an evaluation to identify any potential regulatory gaps and to develop recommendations on how to fill those gaps and maintain appropriate protections. This Pilot Project afforded OSHA the opportunity to supplement that earlier effort by conducting a first-hand examination of the application of its standards and requirements in the DOE environment. For the most part, operations examined by OSHA during the pilot are covered by OSHA rules, regulations, and standards, including the general duty clause. The following issues and hazards were considered in some detail and are discussed separately in the following sections of this report:

- Radiation
- Lasers
- Hazardous Waste Operations
- Process Safety Management
- Firearms and Explosives (limited)
- Chemical Exposure Limits
- Respiratory Protection
- Beryllium
- Training
- Safety and Health Programs [Note: The issue of site safety and health programs was considered more fully under Objective 2, Safety and Health Program Evaluation. DOE currently requires its contractors to implement such programs, and OSHA is currently promulgating a regulation covering worksite safety and health programs, which is a very high priority for the agency. Moreover, an effective safety and health program is a fundamental concept in both OSHA's and DOE's Voluntary Protection Program (VPP). Any applicants for VPP status cannot begin the process without an effective safety and health program in place.]

Radiation

OSHA currently has its own regulation for occupational radiation protection (29 CFR 1910.1096), which is very similar to the Atomic Energy Commission's 1960's version of 10 CFR 20. During the Pilot Project, OSHA had cause to use its radiation regulation on three separate occasions to enforce compliance through issuance of simulated citations. Although the OSHA regulation was applicable in these instances, this cannot be guaranteed for all situations that OSHA is likely to encounter in the future at DOE sites. The regulatory gap analysis OSHA performed between OSHA's, DOE's, and the Nuclear Regulatory Commission's (NRC's)

¹See American Smelting and Refining Company, OSHRC Docket No. 16 (August 17, 1973), where OSHA issued citations on lead exposure using the new regulation shortly prior to its effective date.

regulations indicates that both NRC's rule (10 CFR 20) and DOE's (10 CFR 835) offer greater radiation-related protection in worker safety.

Before OSHA can assume external regulatory jurisdiction, action will be required to address the shortcomings of OSHA's current standard. As noted earlier, OSHA cannot rely on the general duty clause to enforce another agency's standards when the agency already has a standard covering the working condition in question. Thus, as long as 29 CFR 1910.1096 is in effect, OSHA would not be able to use either the DOE or the NRC regulation (10 CFR 835 and 10 CFR 20, respectively) to support Section 5(a)(1) enforcement, even though these regulations are more up to date and are generally considered more protective than OSHA's current standard.

OSHA could modify its existing standard to incorporate any significant differences between the three to ensure similar employee protections under external regulation, or possibly adopt either NRC's or DOE's regulations with some changes. The federal rulemaking process affords OSHA the flexibility to consider DOE's or NRC's existing radiation regulations for this purpose. From OSHA's perspective, it would be more beneficial to modify its own regulation, with modifications derived from both DOE's and NRC's current regulatory set. Because the NRC and DOE regulations also concern public safety and because OSHA's mission is confined to the workplace, only regulations specific to the workplace would be adopted or modified by OSHA.

The federal rulemaking process can be protracted, often taking years from the time a proposed standard is published until a final regulation is adopted. To avoid initial delays in OSHA's ability to quickly enforce for radiation with an up-to-date standard, OSHA has recommended a legislative approach, in which the agency would be provided specific authority by Congress to adopt an existing radiation standard (either DOE's or NRC's, as appropriate) as an interim final rule. OSHA has prepared draft legislation to achieve this objective. OSHA would then be able to use, in the short term, the legislated interim final rule to minimize deficiencies between OSHA's and DOE's or NRC's current regulations.

The possibility of NRC exclusively regulating radiation using their standard (10 CFR 20) is another variable which is briefly discussed in Section 3.3. NRC has indicated to OSHA that NRC's current radiation regulations will not be difficult for DOE to adopt or for NRC to implement at DOE sites. This will diminish the need for DOE's current radiation regulation (10 CFR 835). It is assumed that, if NRC gains jurisdictional oversight, some discussion and modification may take place to incorporate appropriate items from 10 CFR 835 that are lacking in 10 CFR 20.

Lasers

As part of its Pilot Project activities, OSHA examined the laser safety policies and practices at one of the ORNL research facilities. At ORNL, approximately 120 Class 3b and 4 lasers are in operation. Although this evaluation examined only a few lasers and their operations, OSHA found that ANSI standard Z136.1 was followed very closely with few exceptions, and that laser

safety appears to be more than adequate. Laser protection (as well as lock-out/tagout programs, training, and engineering controls) were all found to be in compliance. Management and users were very knowledgeable regarding laser safety and use. It should be noted that DOE Order 440.1A requires only adherence to the exposure limits and technical requirements of ANSI Z136.1; it does not require institution of the program elements of this standard.

OSHA does not have regulations specifically addressing laser safety. However, the ANSI standard is also adhered to in the private sector, and OSHA has used the general duty clause [Section 5(a)(1) of the OSH Act] to enforce this safety- and health-related consensus standard to ensure worker protection. Under external regulation, OSHA would likely continue to accept the ANSI standard as a consensus regulation on laser safety and expect compliance at DOE and other facilities OSHA currently regulates.

Hazardous Waste Operations

In the Pilot Project, OSHA extensively examined hazardous waste treatment and storage activities, as well as general health and safety issues that are common to DOE research, remediation, and soon-to-be privatized facilities. In exploring waste treatment operations, OSHA determined that specific portions of OSHA's Hazardous Waste Operations (HAZWOPER) regulation (29 CFR 1910.120) concerning radiation at treatment, storage, and disposal (TSD) facilities may not suffice. During development of the HAZWOPER regulation in the 1980s, OSHA did not include radiation as a significant hazard at the commercial TSDs that would be regulated. Radiation is considered by HAZWOPER in uncontrolled hazardous waste sites. Radiation issues at DOE TSD facilities are currently addressed by 10 CFR 835. OSHA may need to review its HAZWOPER regulation (and its radiation standards) to ensure that, under external regulation, there would be no gap in safety and health coverage at DOE TSD facilities.

Process Safety Management

All of OSHA's regulations, including the process safety management (PSM) regulation (29 CFR 1910.119), would be applied to operations within the Oak Ridge complex under external regulation. However, because of operational procedures and limits placed on chemical inventories at ORNL and ETTP, many operations would fall outside the scope of PSM. Such was the case for the Toxic Substances Control Act (TSCA) incinerator at the ETTP site. In view of this, OSHA found it very encouraging that DOE and the incinerator operators requested an examination of their compliance with the PSM regulation during the Pilot Project, even though the PSM regulation would not currently apply.

Firearms and Explosives

There is no recognized industry standard for firearms and explosives, as there is, for example, in the case of the ANSI standard for lasers. DOE has developed its own DOE-specific orders, manuals, and technical standards covering these items at DOE sites. In addition, local, state, and

other Federal entities, such as the Bureau of Alcohol, Tobacco and Firearms (ATF), also regulate these activities using a variety of standards. This variety of requirements makes it difficult for OSHA to apply and enforce one consensus standard in general industry for firearms and explosives safety. Under the general duty clause, OSHA can normally enforce ANSI and other nationally recognized consensus standards across the board at private sector facilities (such as university settings, private research facilities, etc.) where all users understand that a single standard exists that comprehensively covers the majority of applications and users. That does not appear to be the case with firearms and explosives safety.

To ensure OSHA's ability to effectively regulate these hazards at DOE facilities under external regulation, OSHA may have to undertake rulemaking to develop a separate regulation for firearms and explosives, based on modifications to DOE's current manuals or technical standards (DOE Manual 440.1-1, "Explosives Safety," and DOE-STD 1091-96, "Firearms Safety"). As in the case of radiation hazards, a legislative remedy may be advisable to allow OSHA to adopt the current DOE requirements for firearms and explosions as an interim final regulation. Before undertaking any action in this regard, OSHA will need to closely examine the responsibilities and authorities of ATF and other minimize the potential for dual regulation in regulating firearms and explosives issues at DOE sites.

It should be noted that, due to the limited application of explosives safety to selected pilot facilities at Oak Ridge, OSHA did not have an opportunity to completely examine the site's implementation of explosives safety requirements.

Chemical Exposure Limits

In earlier cross-comparisons of OSHA and DOE regulations, OSHA identified a number of DOE exposure limits for hazardous chemicals that are more protective for workers than OSHA's current requirements. OSHA observed the application of these DOE requirements during this pilot project, confirming the findings of its cross-comparisons.

DOE's policy to control chemical exposures is similar to that of many states and some industries, which have embraced threshold limit values (TLVs) that offer greater worker protection. From OSHA's vantage point, DOE should continue to advocate more protective measures whenever possible, and DOE has committed to doing so. Under external regulation, however, OSHA would have difficulty enforcing these more protective requirements. OSHA would not be able to rely on the general duty clause, for example, since OSHA already has in place its own exposure limits. To address this situation quickly upon assumption of external regulatory authority, and to ensure that there is no reduction in the ability of the relevant enforcement agency to ensure compliance with these more protective limits, OSHA would need legislative authority to enforce the DOE requirements. OSHA has drafted legislative language to accomplish this objective.

Respiratory Protection

DOE uses OSHA's recently revised respiratory protection regulation. In addition, DOE uses the ANSI Z88.2 respirator standard to provide a source of "assigned protection factors" for respirators and to impose the requirement to use physicians for medical examinations for respirator users. ANSI Z88.2 is currently undergoing revisions to take into account state-of-the-art technology and practices that may have DOE implications. OSHA would not be able to use the general duty clause to enforce these consensus-standard requirements, since OSHA already has a specific regulation for respiratory protection. OSHA recently issued a comprehensive revision to its regulation which became effective during the pilot. OSHA, therefore, does not need to consider any DOE-specific standard revisions at this time.

It was noted that the NRC has also issued a notice of proposed rulemaking (Federal Register Notice, 10 CFR 20, "Respiratory Protection and Controls to Restrict Internal Exposures," 63:38511-38521) in this area. The proposed rule has several conflicts with the OSHA regulation. DOE is providing the NRC with comments on these issues through the rulemaking process and is coordinating those comments with OSHA.

Beryllium

Beryllium was reported to be in some hazardous waste streams at ETTP, but OSHA did not observe any use of beryllium at ETTP or ORNL during pilot onsite activities. DOE has found it necessary to have a special emphasis program to protect against the hazards of beryllium. This program includes the issuance of DOE Notice 440.1, "Chronic Beryllium Disease Prevention Program," and a Federal Register Notice of Proposed Rulemaking (dated December 3, 1998) on the same subject. DOE is not proposing to lower OSHA's Permissible Exposure Level (PEL) for beryllium, but the use of an "action level" to trigger additional protective measures is an additional part of the DOE program not covered by OSHA regulations.

As previously stated, other consensus standards and generally recognized efforts in industry to prevent serious harm or death to employees are also recognized and enforced by OSHA via the general duty clause. This is normally true as long as OSHA regulations do not specifically cover the particular instance. In the case of beryllium, OSHA does cover exposure to this toxic substance under 29 CFR 1910.1000. However, DOE and its contractors should be able to continue the special emphasis program to help ensure that beryllium exposures are kept to a minimum. OSHA has recently amended their regulatory agenda to include a revision to their beryllium standard. If, in the future, OSHA lowers its PEL for beryllium, DOE will adopt it.

Training

Many standards promulgated by OSHA explicitly require employers to train employees in the safety and health aspects of their jobs. Other OSHA standards make it the employer's responsibility to limit certain job assignments to employees who are "certified," "competent," or

"qualified" – meaning that they have had special previous special training. In this Pilot Project, OSHA identified some minor deficiencies in OSHA-required training in isolated situations during the simulated inspections. However, OSHA found that DOE generally provides more extensive health and safety-related training than OSHA currently stipulates.

3.1.2 DOE Implementation and Compliance Issues

This section discusses observations of DOE's current effort to comply with existing DOE-adopted OSHA regulations and how DOE should view its worker protection policy initiatives under external regulation by OSHA.

3.1.2.1 General DOE Compliance with OSHA Standards

In 1990, at the request of the Secretary of Energy, OSHA conducted an extensive program evaluation of DOE. At that time, OSHA found an unfamiliarity with OSHA regulations at a few DOE GOCO facilities, occasionally cavalier attitudes toward OSHA regulations which were fostered by DOE exemptions to the OSH Act, and unique hazards not currently covered by OSHA. In contrast with the past evaluation, OSHA found that the majority of violations at ORNL and ETPP were with existing OSHA regulations or with consensus standards where the general duty clause is enforceable. The typical causal factors leading up to an OSHA citation of the private sector employer normally fall into one of three categories:

- unfamiliarity with the regulation;
- disregard of the regulation; or
- different interpretation of the regulation.

The majority of violations OSHA discovered during the simulated OSHA inspections during the pilot were a result of a differing local interpretation or unawareness of the specifics of the regulations, not a disregard for or complete unfamiliarity with the regulations.

DOE orders and regulations are sometimes more protective than OSHA with regard to radiation and chemical exposure considerations and administration of health and safety program requirements (including NFPA-guided fire protection programs). Some private corporations, consensus bodies, and state programs go beyond current or outdated regulations and strive for greater health and safety protections. DOE's policy is similar to that of many states and some industries in that it embraces threshold limit values (TLVs) and other standards which offer greater worker protection. OSHA encourages DOE to continue to advocate more protective measures whenever possible.

3.1.2.2 DOE Interpretations and Variances

As part of the pilot, OSHA evaluated the impact of OSHA enforcement on DOE's system of variances and interpretations; formal interpretations provided by DOE's "Response Line" that

relate to the application of OSHA standards at Oak Ridge worksites were evaluated during the pilot. The evaluation centered on determining if DOE interpretations are consistent with OSHA regulations, policies, and practices.

Since 1992, DOE has operated a "Response Line" to provide timely responses to requests for interpretations of DOE policies and standards, including DOE-adopted OSHA standards. This program is well received by the DOE community, including contractors, as evidenced by the number of interpretation requests since the start of the response line. In reviewing the interpretations directly related to Oak Ridge, it was evident that the responses were well researched and were based on OSHA guidelines and precedent-setting interpretations. This appears to be a well-operated and disciplined program that provides clarification to employees in regard to their safety questions. The "Response Line" currently performs both a regulatory and corporate support role for DOE sites. Under external regulation by OSHA, the DOE community would legally be subject to the interpretations issued by OSHA to the extent that they may differ from DOE interpretations. DOE, therefore, will need to continue to ensure that any interpretations provided as part of its corporate role are consistent with the OSH Act and OSHA regulations. DOE may need to enhance its liaison role with OSHA to ensure that corporate policies and standards meet or exceed OSHA protection expectations. During inspections of the facilities selected for the pilot's simulated enforcement activities, no issues involving prior DOE interpretations were encountered.

In addition, OSHA reviewed seven requests for variances to OSHA standards submitted to DOE headquarters by the DOE Oak Ridge Operations Office. These variance requests involved such issues as: fixed obstructions in clear access working spaces of electrical panels; color coding of safety-related signs; dimensional deviations for fixed ladders and egress paths; and barriers placed in front of electrical panels to protect from potential damage caused by forklift operations. In each of the seven cases, DOE headquarters either considered the worksite condition to be de minimis in nature or considered the corrective actions taken by the contractor to be as safe and healthful as those which would prevail if the contractor complied with the standard; as a result, DOE headquarters determined that variances to the OSHA standard were not necessary. OSHA reviewed DOE's written findings in these seven instances and agreed that the situations, based on this document review, appear to meet the OSHA definition of de minimis and the workplace conditions meet OSHA expectations. It should be noted, however, that during an actual physical inspection of the worksite, OSHA may find that a particular condition constitutes a citable violation. Moreover, it should be noted that under external regulation, OSHA's variance requirements would apply, not DOE's. DOE would, however, evaluate all contractor variance requests before they are forwarded for OSHA's consideration to ensure that variance requests are consistent with Departmental policy and to determine if there are complex-wide compliance implications.

3.1.2.3 DOE Regulatory and Corporate Policy Roles

Under external regulation by OSHA, the OSHA regulations would become applicable to DOE under the law, and DOE, as part of its corporate responsibilities, would continue to address all other hazards listed above that are not covered by OSHA.

DOE's use of Orders as a vehicle to convey requirements will continue under external regulation to ensure that DOE corporate needs are addressed, but the Orders will not include OSHA regulations, which will be binding as a regulatory matter on DOE contractors. Under external regulation, DOE would still exercise contract authority to mandate and enforce such corporate requirements as written safety and health programs, use of TLVs, and other measures necessary to meet DOE corporate needs. These contractual requirements, plus legally binding OSHA requirements, along with some economic incentives, may be more effective than the current use of DOE directives.

OSHA noted that some S&H requirements vary from site to site within the DOE complex. However, such variability is also noted when examining the safety and health programs of large private-sector corporations that have multiple sites. Some DOE sites have chosen to mandate additional protections by adopting applicable consensus standards.

Enhanced health and safety-related protections currently required by DOE should be continued throughout the transition. At this time, regulatory changes to incorporate more protective regulations exclusively for DOE are not anticipated by OSHA; however, current practice, application, and usefulness of more protective regulations at DOE sites will most likely result in better preparedness for future OSHA enforcement activities. Often, when industries adopt and implement enhanced protective measures, those measures are eventually adopted by regulatory bodies, such as OSHA.

3.1.3 Nature and Severity of Hazards

3.1.3.1 OSHA Simulated Inspection Methodology

The Pilot Core Group decided that simulated inspections would be the primary means of characterizing the safety and health environment at Oak Ridge and established criteria for identifying the number and type of facilities which would be inspected. Specific facilities and operations of interest included general industry (machine shops, maintenance, or utilities), general construction, environmental cleanup deconstruction projects with radiation issues, laboratory operations with no radiation issues, chemical processing with no radiation issues, and chemical processing with radiation issues. DOE and its contractors then presented OSHA with a list of facilities which appeared to meet the established criteria. The Core Group then agreed on the 16 facilities to be inspected. To ensure having a cross section of the complex that accurately characterized the status of safety and health issues at the facilities, it was agreed that more facilities could be added or different facilities could be selected based on employee complaints or other information. Representatives of contractor employees participated in the selection of facilities to be inspected. One additional simulated inspection was conducted at the ETTP "vaults" as a result of an employee complaint received by OSHA during the pilot.

OSHA conducted a scoping visit to become more familiar with the facilities and hazards so that the right mix of personnel could be selected for the inspections. Those inspections were then scheduled over a three-week time frame in July (1 week) and August (2 weeks). Inspectors were brought in from several different OSHA offices and regions, briefed on the facilities to be inspected, and provided with security and clearance briefings and training required by DOE and its contractors.

OSHA attempted to conduct the simulated inspections as closely as possible to the actual process used in facilities under OSHA jurisdiction. A key factor was the inclusion of employee representatives in the inspections. Each inspection included an opening conference, review of processes and records, walk-through inspection with employee interviews, observation of processes and hazards, collection of various samples and measurements, photographing of equipment and hazards, collection and review of documents on exposures and processes, interviews with employer safety and health staff, closing conferences, issuance of simulated citations with simulated penalties and abatement dates, informal conferences with employers and employees, and informal settlements agreement.

OSHA typically assigns both safety and health inspectors to conduct inspections at establishments under its jurisdiction. Often, inspectors from both disciplines conduct their inspections within the same time frame as a team inspection, with separate reports prepared by each inspector. That was the case for many of the inspections conducted at Oak Ridge. Some of the facilities at Oak Ridge received two separate inspections, in order that both safety and health issues could be properly evaluated. Another factor that affects the number of inspections conducted is OSHA's multiemployer workplace policy. The policy is followed when a single workplace is shared by several employers. In most cases, the employers are associated through several layers of contracts related to accomplishing work. An example of such a relationship in Oak Ridge is related to the construction of the bridge at ETTP that was inspected as part of the pilot. DOE, as the owner, contracted with Bechtel Jacobs to construct the bridge. Bechtel Jacobs contracted with MK Ferguson to construct the bridge. MK Ferguson contracted with several subcontractors to accomplish specific portions of the bridge construction. Some of those subcontractors contracted certain portions of their work to other subcontractors.

3.1.3.2 OSHA's Multiemployer Worksite Policy

When OSHA conducts inspections at multiemployer worksites, all parties to the contract are subject to the inspection. A case file is opened for each employer who has employees at the worksite and for some other employers who have control over or responsibility for certain aspects of the work which directly affect safety and health. When hazards are found on the work site, they are associated with employers in accordance with the provisions of OSHA's multiemployer workplace policies, which are contained in OSHA's Field Inspection Reference Manual, Chapter III. Responsibility may be assigned to any or all of the following: (1) the employer whose employees are exposed to hazards (the exposing employer); (2) the employer who actually creates the hazard (the creating employer); (3) the employer who is responsible, by contract or through

actual practice, for safety and health conditions on the worksite, that is, the employer who has the authority for ensuring that the hazardous condition is corrected (the controlling employer); and (4) the employer who has the responsibility for actually correcting the hazard (the correcting employer).

Following the inspections, simulated citations were issued in accordance with the multiemployer worksite policy to private sector employers on the two construction worksites inspected. Since there was no provision in the work plan for issuing citations to DOE under the multiemployer citation policy, the simulated citations, which in OSHA's judgement, could have been issued to DOE under that policy are noted in Appendix A. OSHA has applied its multiemployer worksite policy to other Federal agencies under the authority granted in Federal Register Notice "Basic Program Elements for Federal Employee Occupational Safety and Health Programs", 60:34851-34852, issued July 5, 1995.

OSHA believes that DOE has the overall responsibility [under the Atomic Energy Act, Sect. 161(i)(3), and 29 CFR 1960] for coordinating the occupational safety and health management program for its facilities. The DOE sites many times include a mix of employers and operations, and OSHA believes that successful operation of safe and healthy occupational environments at the facilities requires oversight by the owner (DOE). According to OSHA, this is the same requirement placed on private sector employers throughout the nation. As an external regulator, OSHA would ensure through its enforcement activities that DOE, its contractors, and the rest of the employer universe provide the protections required by the OSH Act. Under external regulation, it would be the responsibility of those employers (DOE included) to actually provide those protections.

3.1.3.3 Simulated OSHA Inspection Results

A total of 16 facilities/sites were inspected. This resulted in 19 simulated inspections due to separately counted inspections of each employer at multi-employer work sites and separate safety inspections and health inspections in some facilities. The hazards identified during the simulated inspections tended to be more complex and of a more serious nature due to the complexity of operations being conducted. Table 1 lists the inspection sites and related citations.

Hazards were identified and simulated citations were issued for 18 of the 19 inspections. After making adjustments in response to informal conferences, a total of 75 violations were identified, with 54 being classified as serious. That translates into a 72% serious rate, which is higher than the 66% serious rate found on average by OSHA. In addition, a general duty letter was issued on an ergonomics issue on one of the inspections.

After reductions, the total simulated penalty associated with the citations issued to all contractors was \$68,025. The average penalty per serious violation in the Pilot Project was \$1,259.72, compared to the average penalty of \$913.50 for serious violations per inspected facility across the United States in fiscal year 1998. DOE believes that a more proper comparison of these penalty

findings would be with facilities of similar size and complexity. However, OSHA traditionally uses the national average as its basis of comparison and does not routinely publish inspection information that is focused solely on large, complex operations.

Table 1 - Summary of Simulated OSHA Citations
(See Appendix A for details)

SITE	NUMBER OF INSPECTIONS	SERIOUS ALLEGED VIOLATIONS	OTHER-THAN SERIOUS ALLEGED VIOLATIONS	SERIOUS VIOLATIONS PER INSPECTION	TOTAL SIMULATED PENALTY	AVERAGE PENALTY PER SERIOUS VIOLATION
ORNL	8	23	11	2.88	\$29,550.00	\$1,284.78
ETTP	11	31	10	2.82	\$38,475.00	\$1,241.13
ORNL & ETTP TOTAL	19	54	21	2.84	\$68,025.00	\$1,259.72

Note: The data in Table 1 provide a summary of OSHA's simulated inspection findings after making adjustment in informal conferences between the Area Director and employers. The data reflect reductions from the initial penalty amounts and, in some cases, a reduction in severity classification from Serious to Other-than-Serious. Details about the standards cited, initial penalties, etc., are provided in Appendix A.

Under this Pilot Project, OSHA did not issue simulated citations to or assess penalties against DOE as the facility owner and general contractor. However, as noted in section 3.1.3.2 of this report, OSHA maintains that it should have citation and penalty authority in regulating Federal agencies such as DOE. Accordingly, OSHA used the opportunity of this Pilot Project to identify which of the items cited against DOE contractors would also have been assessed against DOE, if OSHA did have such authority. Appendix A notes which of the cited items would, in OSHA's judgment, have also been issued to DOE. The estimated DOE penalty amounts for each of these items is not included in Appendix A. However, OSHA's preliminary calculations show that these figures would have been approximately \$66,000, or roughly equal to the amount assessed against the contractors. OSHA and DOE agree that it could be beneficial in any future pilot projects to examine this issue more fully, including procedures that would provide DOE an opportunity to contest OSHA's inspection findings, and other activities that were not undertaken in this Pilot Project.

3.1.3.4 Contractor Self-Inspection and Hazard Abatement Efforts

To prepare for the Pilot Project, OSHA participated in an orientation visit to the ORNL and ETTP sites; at that time, the Core Group selected specific facilities to be inspected later. This orientation visit gave facility managers advance notice of the upcoming inspections, which is normally prohibited by the OSH Act. When OSHA returned to inspect, it was noted that some hazards, which had been observed during the orientation visit, had been abated in the interim. This interim cleanup probably reduced the number of OSHA citations. However, it should be noted that, as part of their ongoing worker protection programs, DOE contractors perform self-

inspections to identify and abate hazards, and such self-inspections were ongoing prior to the beginning of the DOE/OSHA Pilot. Examples of hazards that were identified as part of the self-inspection program during the period between the scoping visit and the on-site OSHA inspections include:

- Ventilation concerns
- Machine guarding
- Exit blocked or impeded
- Deterioration of oxygen and propane hoses used for cutting torch (subcontractor)
- Misabeled chemicals
- Compatibility of chemicals stored in flammable storage cabinet
- Personal protective equipment (PPE) requirements not posted
- Housekeeping (subcontractor)
- Fire extinguisher inspections (subcontractor)
- Platform guardrails not to OSHA requirements (subcontractor)
- Duplex receptacle boxes used as extension cords (subcontractor)
- Walking/working surfaces uneven
- Unclear instructions to workers performing tasks
- Unstable scaffolding (subcontractor)

This information from DOE and its contractors regarding the pre-inspection cleanup of selected pilot facilities is essential for this exercise to give accurate insight into the real impact of external regulation by OSHA on the DOE complex. The OSHA Pilot core team believes that the number and severity of the hazards found as a result of the pilot would probably have been much greater had advance notice not been given. This also shows the importance of DOE oversight and contractor self-inspection and aggressive hazard abatement practices in avoidance of fines and penalties when under OSHA external regulation.

After receiving the simulated citations, each employer was afforded the opportunity to request and attend an informal conference with the Area Director to further discuss the simulated citations and penalties. For this pilot project, OSHA conducted the simulated informal conferences onsite. Typically OSHA conducts informal conferences in the Area Office, which would have required site contractors and employees to travel to Frankfort, Kentucky, or Nashville. OSHA conducted the conferences onsite in this instance as a convenience to the employers and to allow more interested employees to observe the process than would have been the case otherwise.

OSHA conducted a total of 15 conferences over the course of the pilot project, seven at ORNL and eight at ETTP. All of the large employers and some of the subcontractors took advantage of this exercise. As a result of the informal conference, two cited items were deleted and several others had their classification reduced from "Serious" to "Other-than-Serious." Accordingly, OSHA also reduced the simulated penalties by a total of \$21,325, or approximately 24 percent of the total initial penalty amount. The changes which were made during the informal conferences are noted in Appendix A.

The informal conferences afforded the employers and employees an opportunity to gain more insight into the OSHA enforcement process. One of the major insights from the informal conferences was a better understanding by site personnel of how OSHA classifies violations. OSHA relies solely on the gravity of a hazard to determine whether it should be classified as "Serious" or "Other-than-Serious." OSHA also assesses the probability that a hazard will result in injury or illness. This factor is used in determining the appropriate penalty for the violation, but a low-probability "Serious" violation is still classified as "Serious" by OSHA.

3.1.3.5 Contractor Abatement Planning and Budgeting for Self-Identified Noncompliances

The Oak Ridge Reservation has some of the oldest facilities in the DOE complex, dating back to the Manhattan Project. Many of these buildings were built to the code of record in the 1940s and 1950s and have not been upgraded to modern building code requirements. After the DOE Tiger Team Assessments in 1990, there was an effort to identify all noncompliances with DOE-adopted OSHA standards at ORNL, Y-12, and ETTP. Wall-to-wall baseline inspections for safety and health hazards in active facilities were initiated. All noncompliances with DOE-adopted OSHA standards identified through the inspection activities were assigned a Risk Assessment Code (RAC) and were tracked in an automated database at each site. The numerical RAC value was derived from a matrix with "RAC 1" representing the highest risk of injury or illness (based on both severity potential and on the probability an injury or illness will occur) and "RAC 5" representing a de minimis noncompliance (a finding having no impact on employee health and safety).

By September 30, 1995, all RAC 1-3 noncompliances in active facilities were closed in the ETTP compliance tracking database. The closure was based on abatement of the hazard by repair, replacement, or removal of equipment or system from service, or placement of controls to limit or prevent access to the hazard. In addition to ongoing operations and activities, a number of buildings at ETTP have been placed in inactive, shutdown, or non-operational status. Approaches to address identified noncompliances in both active and inactive facilities were developed. Under these approaches, all identified noncompliances in ETTP facilities that were non-operational or scheduled for deactivation and decommissioning and that did not involve worker exposures were administratively closed in the database.

Line responsibility at ETTP for achieving and maintaining a compliant workplace would continue under external regulation by OSHA. However, the prioritization of resources with regard to both the DOE Office of Environmental Management (EM) baseline and individual projects would need to be modified in order to avoid monetary citations and penalties. For the buildings which were identified as inactive and not subject to the abatement activities during OSHA upgrades, additional resources to conduct D&D and/or remediation activities would be required. Additionally, certain building configurations and conditions would require extensive modifications to meet OSHA requirements (i.e., life safety codes). This would necessitate major changes and delays for the EM program baseline and schedule.

Similarly, ORNL has made an aggressive effort to abate noncompliances. The results of the ORNL baseline study determined that there were approximately 28,000 OSHA standard violations within facilities under laboratory management. While conducting the baseline, strides were being made to correct as many of the noncompliances as feasible. At the end of 1991, there were 15,000 noncompliances remaining at ORNL. Milestones were later established to reduce the number by 30% each quarter, which significantly reduced the noncompliances. Even with this effort, ORNL currently is tracking approximately 550 open noncompliances that are classified as a RAC 3, 4, or 5. Examples of typical open RAC 3 noncompliances are walkways in poor repair, electrical panels partially blocked by fixed equipment, inadequate machine guarding, flexible cord used in place of fixed wiring, lack of ground fault circuit interrupter protected outlets, inadequate primary eye wash facilities, and inadequately guarded electrical components.

DOE requires contractors to provide interim protective measures to protect workers from recognized hazards until final abatement is completed. Interim protective measures include providing warning signs, locking out equipment, limiting access to qualified employees, using PPE, and providing temporary measures such as portable eyewashes until permanent installations can be completed. Regardless of the interim protection provided, OSHA would consider the vast majority of these RAC 3 noncompliances as "serious" and would issue citations with penalties to the employer when identified by OSHA during an inspection (first-instance sanction policy). The OSH Act provides that OSHA shall issue a citation if it believes that an employer has violated a requirement of Section 5 of the Act or any standard, rule, order or regulation promulgated under the Act. Severity is then taken into account when establishing the classification of the violation (e.g., Serious or Other-than-Serious) and probability is taken into account when establishing the proposed penalty. DOE ORO and its contractors do take probability, in conjunction with the interim protective measures, into account when assigning abatement priority, allowing for longer final abatement times.

There is also the potential that some of those violations could be classified as "willful," where circumstances merit that classification. It is likely that the OSHA abatement process under external regulation would require DOE and its contractors to provide resources to correct the hazards quickly, which would impact on their budgets. DOE and its contractors would not be able to rely on their current system of priorities for correcting those hazards that OSHA considers to be serious. This underscores the importance of the appropriations process in assessing the impacts of external regulation. Certain actions to remedy alleged OSHA violations may require a line-item Congressional appropriation or may require funds that are not available under the current fiscal year appropriation.

Funding has been requested from the DOE Landlord manager through the Environment, Safety and Health/Infrastructure Management Plan for all existing RAC 3 OSHA noncompliances at ORNL. A total of \$4.9 million (\$2.7 million in FY 1999 and \$2.2 million in FY 2000) has been requested to fix these noncompliances. However, full funding for this \$4.9 million compliance liability is not expected as funding levels are projected to be flat or decreasing. In addition, higher-risk ES&H-related abatement activities exist that would justify funding ahead of these

identified OSHA noncompliances. The current level of funding being spent from the landlord budget to correct the more serious noncompliances is \$257,000.

3.1.3.6 DOE Environment, Safety and Health (ES&H) Prioritization

DOE and its contractors use a risk prioritization matrix that is described in the DOE Environment, Safety and Health/Infrastructure Management Plan. That matrix is weighted more heavily toward those hazards that are covered by public laws and regulations applicable to DOE than to those hazards addressed only by a DOE contractual requirement. This places noncompliances with OSHA standards (invoked through contracts and not required by law on DOE regulated sites) significantly below other hazards covered by laws (e.g., environmental and nuclear safety laws and regulations). In addition, significantly more weight is placed on those hazards having potential consequences or impact on the general public than those with potential for impacting onsite workers.

Under external regulation, violations of OSHA standards will be elevated in the DOE risk prioritization model simply because compliance with the OSHA standards will become law and monetary fines will be associated with noncompliances. Even with this increase in prioritization, the weighting factor for OSHA violations would still be only half the weight assigned to hazards having the potential for offsite consequences. DOE will need to evaluate whether a modification of the matrix is necessary to increase the prioritization weighting for hazards affecting onsite workers.

3.1.3.7 OSHA Enforcement Model for DOE Complex

Based on OSHA's experience in conducting simulated inspections under this Pilot Project, it appears that OSHA's general enforcement procedures can be applied to DOE sites without major modification. Under external regulation, OSHA believes it would be able to undertake its basic inspection practices as described in the OSHA Field Inspection Reference Manual, including those concerning opening conferences, walkaround inspections, closing conferences, and informal conferences with the OSHA Area Director. OSHA does not know of any unusual conditions that would affect post-inspection procedures concerning the issuance of citations with penalties or conducting informal conferences. In addition, although it was not actually tested in this Pilot Project, OSHA does not anticipate any difficulties with the handling of contested cases.

As described more fully in Section 3.4 of this report, a number of issues regarding security, site access, and site-specific training will need to be addressed to ensure that they do not impact OSHA's external enforcement program at DOE sites. In addition, in this and other forums, OSHA has expressed a preference that it be provided specific legislative authority to issue citations and levy fines against DOE, as was recently granted for enforcement of safety and health in the U.S. Postal Service. OSHA believes that, with this additional authority, OSHA would have additional leverage to compel DOE action to ensure that hazards identified in OSHA inspections are abated. In considering this issue, it must be kept in mind that DOE is funded

differently than the Postal Service, which operates much like a private corporation, charging for its products and services and collecting revenue. DOE is a public enterprise, which collects no revenue and is entirely dependent on Congressional appropriations. Therefore, any decision concerning the levying of fines must take DOE's funding structure into consideration. Implementation of this new authority, if provided by Congress, will likely require the development of specific procedures for handling enforcement against another federal agency.

Given the fact that many DOE sites are large-scale operations with unique radiological and chemical hazards, as well as traditional industrial and construction hazards, OSHA believes that an enhanced enforcement model is needed. Such a model, if implemented, would involve more frequent inspections than OSHA typically would conduct, supplemented by cooperative approaches, such as the Voluntary Protection Program (VPP). (Note: Specific recommendations on safety and health program evaluations and VPP are discussed more fully in Section 3.2.4 of this report.) The experience in this pilot project -- including the results of simulated inspections and safety and health program evaluations -- has confirmed OSHA's position that an enhanced enforcement model will be needed under external regulation. However, the precise nature and extent of this model cannot be determined from this single pilot project, although information from this pilot will be useful in that regard. This decision will require additional study of multiple DOE sites and will ultimately depend on the level of resources provided to OSHA to carry out its responsibilities under external regulation.

3.1.4 DOE Costs/Resources for the Pilot Program

3.1.4.1 Contractor

There are additional costs associated with external regulation activities, including regulatory transaction activities such as logistical costs, payment of fines, and abatement of cited violations (if not already self-identified by DOE or the contractors). Table 2 lists the costs that were generated as a result of the pilot activities of ETTP and ORNL prime contractors.

As discussed in Section 3.1.3.5, additional costs of compliance must be considered when examining transition to external regulation by OSHA, such as funding the \$4.9 million budget shortfall for ORNL to abate those workplace conditions that ORO and its contractors have self-identified as being in noncompliance with OSHA regulations. The \$4.9 million funding request for costs of correcting all OSHA regulation-related deficiencies (those OSHA reviewed and determined to be "serious" hazards) contained in DOE's current ES&H Management Plan may not be sufficient if ORNL were to fall under OSHA regulatory jurisdiction. This conclusion is based on: OSHA's view of abatement practices of previously identified noncompliances (see Section 3.1.3.5); the extent of OSHA identified violations during their simulated inspections; and the \$35 million OSHA compliance cost experience at U.S. Enrichment Corporation gaseous diffusion plants at Portsmouth and Paducah.

Table 2 - Contractor Costs Associated with Pilot External Regulation Activities

Cost Element	ETTP (BJC)	ORNL (LMER)
Participation in Planning Meetings	Not available	\$19,890
Escort and Liaison for Simulated Inspections and Program Evaluations	\$75,000	\$41,860
Preparing for and Participating in Informal Conference	\$17,000	\$16,380
Preparing Abatement Plans for Simulated Citations	\$34,000	\$13,000
Abatement of Simulated Citations	\$34,000	\$62,896
Contributing to Pilot Report	\$3,000	\$4,420
TOTAL	\$163,000	\$158,446

Note: If the Pilot Work Plan had included DOE as a participant for simulated citations, resources expended in the Pilot would have been greater.

Note: Some of these costs are due to the nature of work under this Pilot Project and would not normally be incurred in the course of an OSHA inspection. These costs include the planning, preparation and implementation of the OSHA Pilot Project, and making contributions to the pilot report. Other costs were to correct hazards (preparing abatement plans and actual abatement of existing hazards) and would be incurred whether or not an OSHA inspection had taken place. Some of the noncompliance items OSHA found were already recognized by DOE and the contractors and were being budgeted for corrections.

Another factor that may increase the cost of compliance under external regulation is OSHA's legal requirement to cite any violation noted during their regulatory activities, in conjunction with their policy of not considering probability of injury or illness in their decision to cite a violation (see Section 3.1.3.5), but only in establishing the amount of penalty. This could require "immediate" corrections of all similar noncompliances. For instance, LMER is concerned that, if the simulated OSHA citation for unlabeled electrical panels found at ORNL requires the Laboratory to verify and label all electrical panels, then the costs for this task alone could easily be in the millions of dollars. This is supported by an extrapolation of the \$30,000 cost to verify all the electrical circuits in Building 7503, just one building of Robotics and Process Systems where electric panels were insufficiently labeled. The costs to verify and label all circuits in ORNL's expansive 4500N and 4500S buildings alone could be hundreds of thousands of dollars. If each improperly labeled panel carries a fine of \$6,300, the fines could also total in the hundreds of thousands of dollars if

not corrected prior to transition to external regulation. Compliance with OSHA regulations regarding fixed industrial ladders may pose similar costs.

Bechtel Jacobs agrees with LMER's above cost estimates and concerns. The example given (identify, label, and verify electrical panels) is germane and could be applied throughout ETTP. The additional behind-the-scenes costs for documentation, corrective actions, informal conferences (including legal counsel), and verifying completion would far exceed the initial penalty assessed by OSHA.

Costs of the nature outlined above must be considered prior to transition to external regulation, and legislation should be considered to allow OSHA authority to negotiate some special "campaign" or "funding scheme" to abate existing noncompliances over a period of time. Alternatively, Congressional legislation, along with the required additional funding, could require DOE and its contractors to engage in a concentrated effort to correct known noncompliances prior to OSHA's assumption of external regulatory jurisdiction. This would allow DOE and its contractors to focus their full efforts and resources on the correction of hazards, and help reduce or avoid incidental costs associated with enforcement, such as the payment of penalties, engaging legal counsel to contest OSHA citations, etc.

Both the Atomic Trades and Labor Council (ATLC) and the Oil, Chemical, and Atomic Workers (OCAW) at ORNL and ETTP, respectively, have expressed concern that the added burden of money spent on OSHA citations and related expenses could affect the amount of operating dollars available which could lead to a loss of jobs. In Section 3.5, it is noted that early engagement of the unions on external regulation planning is necessary, as they need time to determine whether or not to support such an effort due to the potential impact on jobs. These unions in no way imply that money should take precedence over a safe work place, but the unions recognize that there is already a DOE mechanism in place to have safety and health concerns addressed and hazards abated.

3.1.4.2 Oak Ridge Operations

DOE's Oak Ridge Operations Office participated in every phase of the OSHA Pilot, including:

- initial planning meetings and information sessions,
- conduct of the pilot (escort and liaison for inspections and reviews),
- participation in informal conferences, and
- development of this report.

Nearly 500 hours of effort were devoted to the successful conduct of the pilot. In Table 3, those hours are expressed in dollar amounts.

Table 3 - ORO Costs Associated with Pilot External Regulation Activities

Cost Element	DOE ORO
Participation in Pilot Planning and Briefings	\$6,000
Escort and Liaison for Simulated Inspections and Program Evaluations	\$31,200
Preparing for and Participating in Informal Conference	\$3,500
Contributing to Pilot Report	\$20,800

Note: If the Pilot Work Plan had included DOE as a participant for simulated citations, resources expended in the Pilot would have been greater.

OSHA suggests that DOE may want to consider having the contractors, through the contract, bear some or all of the economic impact from OSHA enforcement activity. This is a growing practice in private industry where multiple employers or subcontractors are involved in the work.

3.2 Objective 2 -Safety and Health Program Evaluation: To assess the effectiveness of DOE safety and health programs, including contractors and subcontractors, and the impact these programs would have on OSHA enforcement activities at DOE sites.

3.2.1 Evaluation Methodology

A team of seven OSHA personnel conducted limited safety and health evaluations of both ETTP and ORNL. These two evaluations took a total of one week onsite, plus several additional person-weeks in report preparation time. The team included professional safety and health staff with expertise in industrial hygiene, occupational medicine, occupational health nursing, and other background specialties, including employee training and safety and health program evaluation.

The evaluations were conducted using the general model of an OSHA Voluntary Protection Program (VPP) pre-approval onsite review. However, due to the limited time and resources, OSHA used a far more focused approach than would be in a typical VPP onsite review, especially considering the large size of these two sites. The evaluations concentrated on reviewing the sites' management leadership, employee involvement, safety and health recordkeeping practices, worksite analysis, contractor program, hazard prevention and control, medical program, and safety and health training.

The team based its findings on interviews with employees and management, review and analyses of records, and examinations of the sites' written programs. Due to time constraints, tours of the worksites were very limited. Therefore, the worksite analysis portion of these evaluations relied heavily on the results of simulated OSHA inspections that were ongoing under this Pilot Project. The team prepared written evaluation reports of its findings, which were shared with site management and employees as well as other Pilot Project core group members for their review and comment. Final copies of the evaluation reports are included as appendices to this document. The following sections summarize the principal findings from each of those reports.

3.2.2 ETTP Evaluation

The ETTP site management has indicated a clear commitment to safety and health and the achievement of its safety and health goals. More work needs to be done in communicating management's commitment to employees, and the site has taken some important steps in this direction since its recent assumption of management and integrating (M&I) contract responsibility. Management has devoted considerable resources to safety and health, although this funding system is complicated by the fact that DOE must approve resources for some hazard abatement and training activities. The site is just beginning to implement DOE's Integrated Safety Management System (ISMS), and there is uncertainty among employees about the impact of this program on current safety and health program efforts.

Employees are not involved in the safety and health program to the breadth and depth that OSHA finds in other large workplaces, in particular those which aspire to be recognized for excellence under VPP. In addition, there are substantial weaknesses in the integration of subcontractors into the site safety and health program. The evaluation report contains several recommendations for improvements in these areas.

Some of the site's recordkeeping practices do not adequately follow OSHA regulations and guidelines. Discrepancies were identified which require the site's attention in several areas, including the timeliness of recording injuries and illnesses, the reporting of cases requiring work restrictions and the determination of work-relatedness if a pre-existing illness exists. The site's injury rates are presently calculated to be below the industry average. However, the correction of the identified recordkeeping problems may increase the site's rates, perhaps to a level near or above the industry average.

The site's industrial hygiene program is adequate, although sampling should be conducted more routinely. The self-inspection process needs to be improved by increasing employee involvement and by better communication of the actions taken to correct hazards. The site's *I Care - We Care* program is an effective means to report hazards and is seen by workers as more responsive to their needs than DOE's Employee Concerns system.

The occupational health care program is well run, addressing both occupational and non-occupational needs of the employee population. However, it has been significantly stressed by recent staff cutbacks. Overall, the training program is satisfactory. The evaluation report contains several recommended improvements in both the occupational health care and the training programs.

3.2.3 ORNL Evaluation

Site management at ORNL shows its commitment to safety and health through clear goals and an overall policy for safety and health, which are included in the management plan. The goals and policy are being effectively communicated to employees. Performance measures and self-assessments have been developed and used to ensure that managers are held accountable for their safety and health responsibilities and that the goals are being met.

Resources for safety and health include a very well staffed Office of Safety and Health Protection, which has the expertise to address the hazards of the site. Hazards are adequately identified through self-inspections, trend analysis, accident investigations, and response to employees' concerns. Resources available for hazard abatement, however, are lacking due in part to DOE's involvement in budgetary requests and the resulting risk-based budgeting priority system used at the site. The evaluation report contains recommendations for improving the self-inspection system, routine industrial hygiene monitoring, hazard correction tracking, and communication with subcontractors.

Both research and bargaining unit employees are involved in the safety and health program mainly through safety committees and special task teams. While these methods are effective, obtaining more day-to-day involvement of workers in safety and health decision making would foster improvements, adding to the already impressive gains that have been made. Subcontractors are not integrated into the safety and health program to the extent that OSHA finds at large companies that have gained VPP status. The evaluation report recommends ways in which these areas can be improved.

The site has begun to implement ISMS. This system somewhat mirrors the elements of OSHA's VPP. However ISMS focuses on including safety and health into the work planning, with the main goal being to accomplish the work. The VPP, on the other hand, places top priority on establishing strong safety and health management systems. The ISMS is also lacking in the area of employee involvement. Specific weaknesses and recommendations for improvement are described in the evaluation report.

The system for OSHA 200 log and medical recordkeeping is excellent and reflects the injury and illness experience at the site. Records are kept appropriately, are well organized, and have been used to identify trends of injury and illness. No deficiencies were noted in the site's recordkeeping system. It is recommended that subcontractors' injury and illness data be more integrated into the site's overall recordkeeping system.

The Occupational Health Care Program is very well run, is adequate for the hazards at the site, and continues to be effective despite the recent reductions in staffing. Both occupational and non-occupational needs of the employee population are addressed. The evaluation report recommends ways in which the program can be strengthened.

Safety and health training is more than adequate for the hazards at the site. Employees receive training based on their job duties and training needs identified with supervisory assistance. The training program is currently being "decentralized." This approach will better utilize subject matter experts and provide improved communication and delivery of training.

3.2.4 Summary

Based on the results of these limited safety and health program evaluations, neither site would be eligible for participation in VPP at this time. For both sites, the number of uncorrected safety and health hazards alone would eliminate them from consideration for VPP recognition. OSHA requires the abatement of all OSHA-citable hazards within 90 days of the completion of the VPP evaluation. This is highly unlikely to occur at ETTP or ORNL, especially for long-standing uncorrected hazards which are awaiting funding, but also for a number of the alleged violations identified in the OSHA simulated inspections. [Note: Recommendations of a programmatic nature (e.g., the implementation of steps to improve employee involvement or lower injury rates) can take longer than 90 days and may result in OSHA's granting Merit status rather than Star recognition.]

The ETTP site has several additional, fundamental shortcomings in its program that would preclude the granting of VPP status. These include the aforementioned serious discrepancies in recordkeeping practices, which, when corrected, may result in injury and illness rates that are above the national average for the industry. In addition, there is a low level of employee involvement in the safety and health program, and the subcontractor safety and health program is not fully effective and integrated. These deficiencies may be due at least in part to the fact that the contractor assumed responsibility under the M&I contract only a few months before the OSHA evaluation was conducted. Acceptance to VPP requires an employer's safety and health program to be in effect for at least one year.

The safety and health program at the ORNL site also would need improvement in several areas, although it comes closer to meeting VPP requirements than does the ETTP program. The site injury rates are significantly higher than the national average for the industry, thereby precluding acceptance into VPP at the Star level. Significant effort would be needed for ORNL to meet this benchmark, although it is notable that recordkeeping practices are proper and the site rates are accurate. (It also should be noted that OSHA will very soon require all VPP sites to have injury and illness rates that are below the national average for the relevant industry.) There is also less employee involvement in the day-to-day operations of the safety and health program than OSHA typically finds in a site with a VPP-caliber safety and health program.

Although neither site is VPP ready, both ETTP and ORNL would probably be eligible for participation in an OSHA strategic partnership for worker safety and health. OSHA is developing an instruction to formalize the agency's requirements for all such partnership programs. A fundamental element of any OSHA partnership agreement is a commitment by the participating employer to implement an effective safety and health program. Other types of partnerships may focus on a specific industry, hazard, or element of a safety and health program. As seen in the results of the evaluations conducted under this Pilot Project, both sites have in place a number of the elements of an effective safety and health program, although there are shortcomings in both. A partnership with OSHA might serve as a good means to improve these programs, perhaps to the level of VPP recognition if the site and its employees choose to work toward that goal.

OSHA strategic partnership requirements will include several core elements that would need to be met, including the development of program impact goals and results-oriented measurement systems, as well as the development of protocols for OSHA to conduct verification inspections. An important factor envisioned for all OSHA partnership programs is the need for OSHA to leverage its resources. However, to achieve this long-term objective, OSHA recognizes that, during the initial stages of a partnership program, it may actually need to expand its commitment of time and resources. The experience in this Pilot Project indicates that this would likely be the case at DOE sites. The performance of a full-scale safety and health evaluation and the conduct of subsequent verification inspections under an actual partnership program would consume far more resources than OSHA was able to devote to the limited effort in this Pilot Project.

The results of the Pilot Project evaluation activities at ETTP and ORNL provide good evidence of the value of having OSHA perform safety and health evaluations at DOE sites under external regulation, assuming that adequate resources are provided for these activities. Employers and workers at the site would benefit by having access to OSHA expertise in safety and health evaluation, which OSHA has developed and honed over many years of working with the most highly successful companies in the private sector. The need for objective, outside evaluations may become even more critical in the coming years as DOE moves to a more administratively complex system that relies heavily on subcontractors to perform many operational functions. DOE would benefit from OSHA's safety and health evaluations by having contractors that are better able to identify and prioritize safety and health goals and the means to achieve them, thereby lowering incidents and ultimately reducing costs to the government. OSHA would profit from these activities by gaining a more in-depth understanding of the safety and health systems employed at DOE sites -- knowledge which could translate into better informed and more focused enforcement activities under external regulation.

3.3 Objective 3 - Evaluate OSHA-NRC Interface: To provide a forum for OSHA and NRC to evaluate regulatory interface issues at DOE facilities.

3.3.1 Existing OSHA-NRC Regulatory Relationships

The NRC currently has authority to regulate the use, storage, and transport of licensed radioactive substances, which include source, by-product, and certain special nuclear materials. OSHA also has jurisdiction over worker exposures to ionizing radiation hazards, and from sources such as X-ray equipment, accelerators, accelerator-produced materials, electron microscopes, and other radiation-producing machines, as well as certain naturally occurring radioactive materials (NORM) in the workplace. Both Federal NRC and OSHA have allowed and encouraged many of the states to assume some of the radiation-related regulatory oversight responsibility. For instance, the Tennessee Division of Radiological Health regulates most NRC-granted licensees in the state's private sector and also regulates X-ray equipment, radiological hazardous waste, etc.

Both NRC and OSHA recently assumed regulatory responsibilities for the U.S. Enrichment Corporation's (USEC's) Paducah and Portsmouth Gaseous Diffusion Plants (which are leased from DOE) under the Energy Policy Act of 1992. OSHA assumed oversight of health and safety of the workers at the leased portions of these two sites in 1993, and NRC began oversight in 1997. Certification of both diffusion plants by the NRC took longer than expected; Congress had intended for NRC to begin oversight as early as the end of 1994. Congress provided OSHA with additional FTEs because of this added responsibility. In recent years, due to resource considerations, OSHA's activities at the two USEC gaseous diffusion plants have been limited mainly to responding to employee complaints. Currently, the NRC and OSHA share health and safety oversight at Paducah and Portsmouth. OSHA jointly regulates, via MOU, the health and safety of workers within any facility or operation licensed or certified by the NRC.

3.3.2 Future OSHA-NRC-State Regulatory Relationships

Although difficulties were experienced during the previous transitions to external regulation at the USEC plants, those events can serve as the initial learning experience in examining NRC/OSHA regulatory issues and the potential conflicts to dual regulation. The DOE external regulation pilots conducted to date have provided limited opportunity to further explore the potential interrelationship of OSHA, NRC, states, and DOE and its contractors. OSHA has not had the opportunity to fully participate in other external regulation pilots in 1998 involving the NRC due to funding and logistical hurdles.

The NRC has currently examined three different DOE sites or facilities (Lawrence Berkeley, Oak Ridge, and Savannah River) in terms of NRC external regulation, and OSHA has briefly interfaced with the NRC on two of these pilots. While the NRC examinations have been very detailed, the evaluation of external regulation has mainly occurred at a single operation within the specific

DOE site due to resource and other restrictions. For instance, at Oak Ridge, NRC examined the Radiochemical Engineering Development Center (REDC) operations extensively and provided a mock-licensing exercise for this facility; however, the entire site at Oak Ridge and ETTP was not extensively considered. The NRC and OSHA jointly toured other sites and examined certain health and safety issues. This interface was mainly confined to the radiologic, security, facility, and transportation arena. Workplaces where the NRC normally does not venture, such as machine shops, steam plants, lead shop, etc., were not jointly evaluated. Personnel from the Tennessee Division of Radiological Health, Department of Environment and Conservation, also were provided a forum to interface with the Federal NRC and OSHA. As a result of these limited interfaces, NRC overlaps with OSHA regulations and oversight were noted in four critical areas:

- fire safety
- chemical safety (includes process safety management; in addition, NRC relies on OSHA's chemical hygiene standard during mock-license procedures or inspections)
- emergency response
- radiation

According to the NRC, the Tennessee agreement state program would not regulate Oak Ridge Federal activities (including nuclear reactors, plutonium use, storage, and movement, and identified security and facility interests). However, the agreement state program is currently regulating some activities and previously licensed nuclear material at reindustrialized non-DOE commercial sites at ETTP. Federal NRC has indicated that oversight of DOE or its privatized entities by any state program will continue on a case-by-case basis, and much of the DOE complex may likely fall under Federal NRC.

The NRC is also examining a role as lead or exclusive regulator of specified DOE sites or operations. Currently, the agency is examining the potential to regulate NORM and machine-produced radiation and further extend its reach into the workplace by potentially including chemical and fire safety in future licensing agreements with any entity, not just DOE. These activities would serve to enhance NRC's role in external regulation; however, any NRC decision needs to consider the multitude of operations that are not directly involved in radiation and the complexity of DOE sites.

Conflicts of interest between DOE and the NRC also have to be considered. The NRC's Office of Regulatory Research has relied on DOE and its contractors (mainly national laboratories) to provide extensive research in areas including, but not limited to, reactor safety, accident management, human performance, radiation protection, and waste management. The NRC has already issued a preliminary report (SECY-98-003) regarding the potential conflicts of interest. Indications are that these conflicts may be easily resolved, and in past conflicts, NRC had to either move the work to commercial vendors or perform it in-house. OSHA must also consider its limited expertise in radiation, security, and related facility safety. In this regard, it appears more advisable for the NRC and OSHA to provide dual, coordinated regulation at DOE sites to ensure complete protection of the workforce.

The potential interface between OSHA and the NRC at DOE GOCO facilities and the regulation of radiation hazards should be explored further as future pilot projects develop at other GOCO facilities in FY 1999. Although the NRC and OSHA currently share responsibility at NRC-licensed or certified facilities, the most effective system of regulation should be established after future pilots are conducted that specifically address this issue. The Energy and Water Development Appropriations Act (P.L. 105-245) provides direction for OSHA, NRC, and appropriate State and local regulatory authorities to participate in future DOE external regulatory pilot activity in FY 1999.

3.4 Objective 4 - Inspection Procedures and Protocol: To assess potential concerns related to OSHA inspections, including security clearance issues, site access training, and the need to protect compliance safety and health officers (CSHOs) from unique and unfamiliar hazards at DOE sites.

3.4.1 Methodology

The work conducted under this objective addresses the potential impacts on OSHA enforcement and other activities at DOE sites that might arise because of national security concerns and other site-access considerations. The findings presented here are based on interviews with DOE and contractor officials at Oak Ridge, reviews of DOE and contractor documents related to security and classification issues, and interviews with officials of the Tennessee Department of Environment and Conservation (TDEC), who for several years have conducted external regulation activities at Oak Ridge sites.

Because of resource considerations and time constraints, a secondary objective to assess the need for OSHA to conduct pre- and post-visit physical examinations for its CSHOs was not undertaken as part of the Oak Ridge Pilot Project. Nonetheless, OSHA will need to consider this important issue before assuming external regulatory authority at DOE sites.

3.4.2 Overview

There is the potential for significant impact on OSHA's future external regulatory activities at DOE sites because of national security and other site-access concerns. These impacts fall into four general areas: (1) obtaining proper security clearances for OSHA employees who need to be onsite to conduct enforcement and other activities; (2) ensuring that site access is unimpeded so that OSHA can meet its requirements under the OSH Act, in particular for conducting unannounced inspections, while also meeting DOE's security concerns; (3) identifying and obtaining the site-specific training that is required by DOE or its contractors to enter the site or to conduct enforcement activities related to certain operations; and (4) developing procedures to ensure that classified materials are properly identified and protected.

ETTP and ORNL staff made a good faith effort to accommodate OSHA's site access during this Pilot Project. OSHA inspectors were given access to areas without delay, with one exception that occurred during the inspection of an employee complaint, where some delay to access the site and perform employee interviews was noted. Unfortunately, OSHA's ongoing experience has not been as positive with the gaseous diffusion plant in Paducah, Kentucky, which is leased and operated by the USEC. At the USEC's Paducah plant, where OSHA actually has enforcement authority, OSHA compliance staff have reported that Paducah's access and badging procedures have resulted in delays. OSHA would prefer to see access procedures modeled after the cooperative approach employed at Oak Ridge during the Pilot Project.

OSHA wants to ensure that security and access issues do not become impediments to OSHA inspection and other activities during transition to external regulation. Since this is a potential problem that could arise at sites across the DOE complex, the active involvement of DOE and OSHA at the headquarters level is needed in developing solutions and procedures that are consistent from site to site. This also will be more cost- and time-effective for OSHA, eliminating the need for OSHA to negotiate solutions and procedures with each site. The Memorandum of Understanding (MOU) of August 10, 1992, between DOE and the Department of Labor provides an existing means to implement a cooperative effort of this type.

3.4.3 Security Clearances

Security clearances are required for individuals to obtain unescorted entry into certain areas of DOE sites; the number of clearances varies from site to site, with the most expected at defense sites. The majority of each DOE site does not require security clearance for access. DOE uses the security clearance designations of “L” and “Q” as opposed to “Secret” and “Top Secret,” and the process for granting these clearances is separate. Q clearances are required to enter the most highly restricted areas at DOE sites. L clearances are required for other less-restricted areas. There are more L clearance areas than Q clearance areas. Individuals must have a “need to know” to enter a restricted area, even if they have the proper clearance.

Obtaining a security clearance, in particular at the Q level, requires an extensive background check of the individual, sometimes taking up to a year to complete. DOE does not conduct the background investigation, but contracts out this function to the Federal Bureau of Investigation, the Office of Personnel Management, or others. DOE does grant the clearance, based on the findings contained in the background check and thus is the final authority. DOE can expedite the process somewhat by assigning higher priority to a particular investigation, but the impact on time frames is limited. Follow-up investigations are conducted every five years for both Q and L cleared individuals. The original clearance remains in effect while the follow-up investigation is being conducted. Q clearances cost around \$3,500; L clearances cost only \$100 each.

Under external regulation, OSHA will need to ensure that it has a sufficient number of CSHOs and other personnel strategically located with the proper level of security clearance to carry out its activities at DOE sites. To meet this objective, OSHA might decide to obtain Q clearances for all personnel who would normally conduct activities at DOE sites, thus ensuring that OSHA has the proper expertise to address every likely eventuality. This would require OSHA to weigh the advantages of obtaining Q clearances for staff assigned DOE-related responsibilities against the disadvantages of extra cost and time that would be involved.

Alternatively, OSHA might decide to obtain Q clearances for a limited number of personnel for each site, with the remainder having L clearances. This conforms to the approach used by the TDEC, which has elected, for fiscal and convenience reasons, to limit the number of Q clearances to approximately 40 percent of the staff they have devoted to Oak Ridge. If this approach is taken, OSHA will need more information about the security clearance requirements at each of the

sites in the DOE complex. OSHA would then need to conduct brief familiarization visits of each DOE site to determine the types of hazards present and the kinds of CSHO expertise needed.

Another consideration involves who will “hold” (maintain administrative control of) security clearances granted to OSHA employees who do work on DOE sites:

- OSHA can enhance its own system for administering security clearances of its employees, helping ensure that there are always a sufficient number of security-cleared staff with the proper expertise. This would require OSHA to apply additional resources to their existing system, including after-hours emergencies.
- The DOE contractor at each site could administer clearances for OSHA employees who regularly conduct business at that site. This model has been used successfully at ETTP for TDEC personnel. However, if this system were adopted across the DOE complex, significant conflict-of-interest issues could possibly arise from putting the regulated employer in charge of controlling the clearances of employees of the regulating agency.
- DOE could administer clearances for OSHA employees. Again, this could raise conflict-of-interest issues.

Security clearance procedures should also allow the transfer of an individual's clearance information from one site to another. This would allow OSHA personnel with unusual or specialized expertise to gain access to secure areas at sites across the DOE complex, as needed. Based on the experience at ETTP, this can be done electronically.

3.4.4 Site Access

Reasonable access to the worksite is an important aspect of an effective OSHA enforcement program, supporting the fundamental agency concept of unannounced inspections. The OSH Act specifically recognizes the need for access:

“ . . . upon presenting appropriate credentials to the owner, operator, or agent in charge, [the OSHA inspector] is authorized to enter [the workplace] without delay and at reasonable times . . . to inspect . . . during regular working hours and other reasonable times, and within reasonable limits, and in a reasonable manner”

In keeping with this provision, OSHA’s standard practice when initiating an inspection is first to make contact with the appropriate management official, usually the plant manager. Then, after conducting an opening conference with the employer and employee representatives, the OSHA inspection proceeds to the operational area of the plant. For their own protection and to ensure that safety of others is not compromised, OSHA compliance officers do not enter areas where work is going on without the proper authorization, instruction and escort, as appropriate.

At Oak Ridge, access to the three major sites is controlled by DOE contractors, who control site access by providing badges to individuals who are authorized for entry. A possible model for future OSHA access involves TDEC, whose personnel are provided with permanent “non-employee” badges. These badges allow entry to the site without the need to sign in at the visitors’ checkpoint or to endure other delays. TDEC personnel keep the badges with them when they leave the site, just as any site employee does, and they use them to enter the site when they next return to the facility to conduct business.

An alternative approach that merits further exploration concerns a system reportedly in use at the Hanford site, in which NRC personnel are badged by their own agency and these badges are accepted for entry by the DOE contractor. Another suggested approach is for DOE headquarters to authorize OSHA personnel access to DOE sites. One downside to this approach is that it would not allow compliance officers to proceed directly and without delay to the onsite location of the appropriate management contact, but would instead involve verification and potential delay at the site entrance.

Whatever approach to site access is ultimately selected, DOE and OSHA will need to work together to ensure that consistent procedures are in place throughout the complex to achieve the objective of reasonable access. This will help minimize potential disputes between OSHA and site contractors, as has occurred at USEC's Paducah site, and minimize the resources required for OSHA to negotiate separate entry procedures for covered sites.

3.4.5 Site-Specific Training

At Oak Ridge, DOE contractors have implemented site-specific training requirements to ensure that individuals have the necessary awareness of hazards and other issues associated with work operations they may encounter onsite. At ETTP, for example, the contractor has identified over 100 different training modules in the area of environment, safety and health. OSHA believes that only as few as three training modules (e.g., General Employee Training, Radiation Worker II, and Hazardous Waste Operations) would be needed for its staff to enter the site and various work areas on the site without escort, and Oak Ridge DOE and contractor personnel generally agree with this assessment. Nonetheless, the potential exists for contractors at some DOE sites to use training requirements as a means to limit OSHA’s access and ability to conduct its activities (e.g., by requiring OSHA to stop what it is doing and take the required training or wait for escorts to arrive). Based on OSHA’s experience in the private sector, these delays are most likely to occur following a significant accident -- a time when OSHA’s quick access is especially critical, but when companies are reluctant to allow OSHA on the scene or to provide escorts.

The Oak Ridge pilot demonstrated the need for OSHA compliance officers to receive training required for site access in advance of their work on site at the DOE facilities. One complicating factor that merits further study involves the variety of access training requirements across the DOE complex, resulting from site-specific facility differences. One solution would be to establish

a complex-wide training program (or a policy of training reciprocity across the sites), supplemented by brief, site-specific orientations, that would meet all access requirements.

3.4.6 Handling Classified Materials

In the interests of national defense, DOE and its contractors have strict procedures regarding the handling of classified materials, and in the course of its work under external regulation at DOE sites, OSHA will almost certainly be involved in situations where CSHOs must deal with classified documents and materials. For example, during its inspections, OSHA takes written notes and makes audio recordings of findings, which may contain information about classified processes or materials. OSHA routinely takes photographs and makes video recordings, which may contain images of classified areas. OSHA often requires employers to provide copies of documents to substantiate its findings of an inspection, and at DOE sites, such documents may well be classified. In addition, OSHA health inspections often involve the examination and monitoring of chemicals used in the workplace, which might be considered classified information.

During the Pilot Project, OSHA, DOE, and contractors had an opportunity to work through some of these procedures as part of the simulated inspection process. This pointed up the need to establish policies and procedures to ensure that OSHA activities do not result in the inadvertent release of classified information. At the same time, these procedures must be designed so that OSHA's inspection and other activities are not constrained. Moreover, they must preserve the integrity of the OSHA inspection process. Documents and materials (including audio and video tapes) that OSHA prepares and collects during the inspection process become part of an official federal investigation file, and they are often used as evidence in litigation that might follow an OSHA inspection. A particular sensitivity arises in the situation where information obtained from employee interviews is included in the OSHA case file. OSHA goes to great lengths to ensure that personally identifiable information is not released to anyone, in particular to the employer. OSHA's inability to guarantee anonymity would have a chilling effect on the willingness of employees to provide OSHA with information as part of the inspection process.

Policies and procedures for dealing with classified materials should include provisions for:

- Training of CSHOs and other OSHA staff who routinely conduct activities at DOE sites about classification issues that exist at the site.
- Assignment of Derivative Classifiers, either in DOE or in OSHA, to review OSHA-related material for classification purposes. The typical practice of having the contractor fill this role would not be acceptable to OSHA, because of the contractor's inherent conflict of interest.
- The protection of classified materials that become part of OSHA inspection case files, either by establishing secure areas in the relevant OSHA Area Office or, as suggested by

DOE at Oak Ridge, by making available secure areas onsite for the storage of OSHA information, including office space with locked files.

3.5 Objective 5 - Engage and Inform Site Personnel About OSHA External Regulation: To engage and inform site management and employees about external regulation in general, and OSHA enforcement in particular.

3.5.1 Pilot Communication Activities

Any time an effort such as this is undertaken, clear and consistent communication is imperative. This communication must span hourly workers to senior management. The Oak Ridge Pilot did this with varying degrees of success.

Several activities were undertaken to inform bargaining unit representatives and their unions of pilot and external regulation activities and to engage them in the planning and implementation of the pilot. In preparation for the pilot at Oak Ridge, OSHA personnel briefed the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) Safety Committee on external regulation in general and the Oak Ridge pilot in specific. An AFL-CIO safety sub-committee was formed to involve the International Union Representatives interested in external regulation of DOE, and those representatives contacted OCAW representatives at ETTP. At ORNL, the 17 local unions are represented by the ATLC, and all communication went through that office. A Pilot Core Group was formed locally which included ATLC, OCAW, OSHA, DOE, LMER, KBCTC, and BJC. This group was tasked with final work plan development, including determining what facilities at the sites would be inspected, identifying personnel interfaces, the time frame of the pilot, and how to inform employees of the coming pilot.

The Pilot Core Group decided to inform employees about the pilot by using the existing internal communication systems at both sites. Articles were published in *ORNL Today* at ORNL and *M&I Times* at ETTP, and all-hands meetings were also planned for each site. At ORNL, it was requested that an extra meeting be held for the Fabrication Shop, Shipping and Receiving, and the Lead Shop since they are in close proximity to each other but are not located inside the main plant. This extra meeting was instrumental in informing the employees of the pilot. Attendance at the two main meetings was low; however, this could be attributed to the fact that the Pilot was limited to simulated inspection of designated facilities and did not directly affect all employees.

3.5.2 Future External Regulation Communication

It is vital that communication efforts be well coordinated. Communication at the work site must be complete and consistent. All affected parties should be brought on board during the planning stages. This is especially true of the labor unions as they need time to determine whether or not to support such an effort due to the impact on worker safety and health protection, responsibilities, avenues to address concerns, budgeting, funding, and jobs.

Additional communications efforts could be employed for future pilots or during any future external regulation transitions such as:

- Mail-outs to the employees at home explaining, in plain English, when the changeover will take effect, how it will be accomplished, what regulations the employees will be held accountable to, and what differences the employee can expect to see in the work place. The OSHA booklet 2031 should be included in this mail out.
- Required attendance at "all hands meetings." These meetings should include site management, OSHA, DOE, and union leadership. Site management must include senior management to show the importance of this effort and their support.
- Consistent dissemination of information. One way to ensure this consistency is with a video presentation detailing the items in the mail-outs. The same individuals should conduct all meetings to ensure consistency of information. If this is not possible, the use of prepared lesson plans and briefing materials in addition to a videotape would assist in maintaining quality and consistency of information as it is presented at different sites.
- Final agreement as to roles, responsibilities, and details of the pilot before the start of the information meetings.
- Bulletins explaining the changeover, which could be used as subjects for tool box safety meetings.

Most importantly, the pilot team should allow enough time to "do it right." The communication process needs to be considered early in future external regulation pilots or transitions, and communication activities should not be shortcut.

3.6 Objective - Transfer of Regulatory Authority for Privatized Facilities: **An additional objective regarding privatization was undertaken as a separate effort to support the ongoing evaluation of issues surrounding the transfer of privatized (reindustrialized) DOE facilities. This objective is to evaluate the impact of current and expected DOE privatization activities on OSHA and affected State Plan states.**

3.6.1 Background on Privatization

According to the January, 1997, DOE report entitled *Harnessing the Market: The Opportunities & Challenges of Privatization*, DOE wants to use privatization "to remove the agency from those activities that are not inherently governmental functions or core business lines; to improve the management of remaining activities; to reduce the costs of doing business; and to shift greater performance and financial risk to the private sector." The three major types of privatization initiatives are divestiture of functions, contracting out, and asset transfers.

Privatization is being pursued across the complex in different ways. ORO classifies privatization at the ETTP as a type of asset transfer, and calls it "reindustrialization." The 1997 report defined asset transfers to include "asset sales, or leases or donations that imply little or no government involvement after transfer which affect property more than people."

The ORO Office of Reindustrialization views reindustrialization as a method to accomplish environmental cleanup at reduced costs to the Department by attracting private sector investment through the use of underutilized and/or idle assets. ORO is using reindustrialization to accelerate cleanup, reduce costs, reuse assets, reduce risk, encourage and promote private sector investment and where possible, assist in promoting economic stability.

3.6.2 The Purpose of the Joint Evaluation

Headquarters staff at OSHA and DOE have been working to develop a joint privatization transfer policy. That policy is intended to establish an effective process for transfer of privatized sites/facilities from DOE to OSHA jurisdiction, and to identify criteria for determining which sites and facilities are appropriate for transfer to OSHA during the period before any transition of the DOE complex as a whole.

In order to gain a better perspective and understanding of these matters, DOE and OSHA decided to use the opportunity while onsite during the Oak Ridge pilot project to evaluate the impact of current and expected DOE privatization/reindustrialization activities on OSHA and affected state plan states. OSHA and DOE hoped that this activity would aid their efforts to establish a joint OSHA-DOE privatization transfer policy.

The privatization evaluation was a separate effort from the other pilot activities at Oak Ridge and did not involve in-depth inspections, issuance of simulated citations, and other simulated enforcement elements that were used in achieving other pilot objectives. Nonetheless, this important objective was pursued concurrently with the other pilot activities. The activities under this objective focused primarily on information gathering and on extensive walk-through visits of most of the leased facilities at the ETTP.

3.6.3 Legal Authority for DOE's Reindustrialization Activities

DOE has relied on two independent legal authorities for its privatization actions. Section 161(g) of the Atomic Energy Act authorizes DOE to sell, lease, grant and dispose of real and personal property. In addition, the Hall Amendment, Section 3154 of the National Defense Authorization Act of 1994, authorizes the lease of surplus DOE real property to other public and private entities. The Hall Amendment specifies that before DOE leases properties on the National Priorities List, DOE must obtain the concurrence of the Environmental Protection Agency that leasing the property is consistent with safety and the protection of public health and the environment.

DOE had relied on the Hall Amendment to pursue reindustrialization at the ETTP until the ORO, in coordination with General Counsel at DOE headquarters, determined that Section 161(g) of the Atomic Energy Act of 1954 was a more appropriate authority. ORO anticipates that future leasing activities of reindustrialized facilities at the ETTP will be conducted under the authority of Section 161(g).

OSHA notes that leasing under the Hall Amendment authority provides EPA's independent judgment that the leased properties do not pose radiological or chemical hazards to the public in leased facilities. OSHA believes this will help them assess any potential hazards to workers employed in the leased facilities. OSHA is reviewing the ongoing discussions between DOE and EPA over ORO leasing authorities and the potential impact these issues have on worker safety and health to determine OSHA implications for the proposed transfer process.

3.6.4 The Relationship Between Reindustrialization and Occupational Safety and Health

Throughout the nuclear weapons complex, DOE continues to prescribe and enforce regulations for the protection of employee safety and health. By the terms of Section 4(b)(1) of the Occupational Safety and Health Act of 1970, OSHA is precluded from enforcing its standards at these facilities.

DOE's movement toward privatization affects the regulatory boundaries between DOE and OSHA. In some cases where a facility has been privatized, DOE would like to transfer the responsibility for prescription and enforcement of occupational safety and health to OSHA. In 1992, OSHA and DOE entered into a memorandum of understanding (MOU) that continued the recognition of DOE's self-regulation of occupational safety and health at government owned,

contractor operated (GOCO) facilities. Subsequent to that MOU, DOE and OSHA developed and implemented a process by which privatized facilities could be removed from DOE's system of self-regulation. In this process, DOE notifies OSHA about the proposed privatization. After OSHA agrees to accept jurisdiction, the agencies make public notice in the *Federal Register* regarding the amendment to the 1992 MOU with respect to the transferred facility.

The current process for transferring jurisdiction of former GOCO facilities has not kept pace with DOE's reindustrialization and privatization efforts. DOE has notified OSHA of over 130 current and future privatizations, of which about 80 have already been completed. To date, OSHA has officially accepted safety and health jurisdiction over two facilities, both at the Savannah River site. In each case, the 1992 MOU was formally amended through the process described above. The gap between DOE privatizations and the agencies' official actions to adjust their jurisdictions was a major motivation for this effort at ETTP.

3.6.5 The Project Team and the Evaluation Process

OSHA, DOE EH, and DOE Oak Ridge (ORO) representatives conducted extensive walkthroughs (but not simulated inspections) of reindustrialized facilities at the ETTP to obtain information on work being performed, assess impacts to OSHA, and facilitate transfer to OSHA regulatory authority.

The evaluation of reindustrialized facilities was different from other pilot activities in several ways. OSHA did not issue simulated citations, provide for informal conferences or accept employee complaints at reindustrialized facilities. Instead, OSHA determined if potential hazards were facility-related or introduced by the subtenant and whether they could be abated quickly. OSHA also looked at leases/subleases and related documents for DOE interfaces to determine possible preemptions to OSHA regulation. OSHA also evaluated whether DOE's limitations or physical access to the site might impair access by OSHA personnel. However, OSHA did not measure or assess the extent of radiological hazards at reindustrialized facilities, beyond observing the signage relating to radiological control.

DOE personnel conducted walk-throughs of the reindustrialized facilities prior to the walk-throughs by the joint team, and identified and documented facility-related hazards. Many of the facility-related hazards identified during the years prior to the OSHA walk-throughs were labeled or tagged near or on the hazard. Examples of hazards found prior to and during the walk-throughs included facility misuse, insufficient clearances in front of electrical panels and non-compliant fixed ladders and platforms. OSHA did not include these labeled and tagged hazards in its list of potential hazards. Some of the non-labeled or -tagged hazards previously identified by ORO were included on OSHA's list (Appendix D).

3.6.6 Summary of the Team's Observations

DOE has leased ETTP properties available for reindustrialization to the Community Reuse Organization of East Tennessee (CROET). CROET subsequently subleases property to private sector organizations. An array of approaches are being employed at ETTP within some 35 subleases with 18 entities, employing approximately 250 people.

The pilot team visited approximately 16, 1940's- and 1950's-vintage facilities. Most building systems, such as heating, ventilation, and air conditioning and electrical distribution systems, were built to the code of record at the time of initial construction. Many facilities, including K-1401, formerly used by DOE as a machine shop, house numerous private sector subtenants. Many facilities contained equipment (such as drill presses, lathes, grinders) that were subleased in "as-is" condition. Several ETTP utility operations, such as the steam plant, have also been reindustrialized.

OSHA team members documented 85 potential hazards during the pilot walk-throughs. (The list of OSHA observed potential hazards is contained in Appendix D.) None of the potential hazards were unusual or unique to DOE operations. (However, OSHA did not evaluate the extent of radiological contamination in the facilities.) Forty-nine of the 85 (58%) of all documented potential hazards were directly associated with subtenants' operational activities at the facilities. An additional 17 (20%) of the identified potential hazards were related to equipment subleased to subtenants in "as-is" condition. The remaining 19 (22%) of the potential hazards were considered facility-related. Seven of the 19 were associated with walking/working surfaces, 4 were electrical (such as unlabeled circuit breakers), and the remaining 8 were miscellaneous. Most facility-related potential hazards had been identified before buildings were shut down in the 1980's and 1990's. CROET's subtenants are informed by ORO and understand that it is the subtenant's responsibility to protect their employees and abate hazards. All of the identified potential hazards can be abated.

While 66% of the OSHA- documented potential hazards were considered serious, two potential imminent danger hazards were identified:

- In K-1401, a 3-phase electrical disconnect service to a machine tool being installed was energized while the electrical panel connected to the machine was open and a bare electrical cable exited the rear of the machine into the aisle. The subtenant immediately abated the potential hazard when the potential imminent danger hazard was identified
- In K-1098F, there was evidence that the subtenant in K-1098F was using an abrasive blasting facility as a paint spray booth, although the facility did not meet the requirements for protecting against the use of flammable or combustible materials. This concern was previously identified by ORO during a prior walk-through and ORO requested painting activities be stopped pending a facility review and classification. At the time of the team's walk-through, OSHA identified evidence of painting activity, and believed the condition created an imminent danger situation and notified ORO of their concern. ORO

immediately requested that CROET advise the subtenant not to restart any painting activities until a comprehensive evaluation of the facility could be conducted. The subtenant continued abrasive blasting operations and began evaluating the facility for compliance with standards. ORO provided technical assistance to subtenants and CROET in the review of appropriate standards until a determination could be made to restart. ORO subsequently advised CROET that painting activities in the leased space should not be allowed and provided appropriate facilities for painting activities.

3.6.7 Facility Highlights

K-1401: This large machine shop facility was occupied by five tenants. Four additional areas were being prepared to be leased, and two large areas were undergoing cleanup of residual radiological contamination. In addition, four DOE activities were operating in this facility, among which potential noncompliance items were noted. The facility has radiological contamination above the eight feet level, in several ground floor areas, and in the basement. Decontamination work was ongoing as was decontamination and preparation of equipment for an auction. Facility hazards were present; primarily electrical, and fixed ladders and platforms. Essentially all of the leased premises also evidenced noncompliance items that were not related to facility hazards. One potential imminent danger hazard was observed which was immediately abated. A multiple tenant issue was observed which involved an electrical pull box located in one tenants space separated by a fence from another tenant who was utilizing the power and would have been unable to promptly disconnect.

Team members were informed that DOE had conducted a risk-based radiological survey in K-1401. Approximately 16,000 measurements resulted in an estimated radiation dose of 0.02 to 16 mrem/yr. DOE's routine monitoring throughout K-1401 continues to confirm that there is no migration of contamination. ORO is continuing to have radiological surveys conducted to characterize the radiation hazards present in the facility and down-posts (reduce radiation controls) areas of the building where appropriate. Approximately 140,000 sq. ft. of K-1401, outside of leased space, are being decontaminated under a no-cost contract to DOE as previously described. DOE believes that this effort will further reduce the potential exposures and risks in K-1401.

K-1035: Part of this facility was occupied by one tenant while the remainder of the facility had been leased to CROET for subsequent subleasing. Both areas evidenced potential noncompliance items, some of which were facility hazards.

K-1006: This is a laboratory facility with a single tenant. OSHA observed facility hazards and residual radiological contamination. Very old electrical service and switch panels frustrate the application of the lock out/ tag out requirements as locks can not be utilized and tags must be taped to switches. Areas posted as containing asbestos were present in this facility, as well as other reindustrialized facilities at ETPP.

K-1004D: This laboratory facility was being prepared for lease. Due to the very recent departure of the previous occupants and the associated disarray of the premises, the team made no attempt to evaluate this facility.

K-1501: The steam plant, was leased to CROET. CROET then contracted with a private company, OMI, to operate the plant. OMI subsequently sells the steam and plant air to site tenants and DOE. This facility had undergone renovation and upgrade not long ago and was, generally, in good condition. A few facility hazards associated with fixed ladders and platforms were observed.

K-1098F: This is an abrasive blasting facility that was subleased to a single tenant. See Section 3.6.6 for a description of a hazard considered by OSHA as an imminent danger hazard.

K-1220: The tenant space was a portion of the K-1220 building. A mixture of facility and tenant-induced potential noncompliance items were noted, all serious.

K-1037: This facility was not visited as it involves the use of a classified process to produce a non-classified commercial product. Security clearances are required to enter this facility. A unique partnering arrangement between ORO and the tenant governs the use of this facility.

K-1200: ORO is preparing this facility to be leased. This lease will involve the decontamination and removal of equipment and its eventual sale as scrap material. In this instance the sublessee will be required to have security-cleared employees and will work under DOE 10 CFR 835 radiation protection standards, an approach based on the contractual relationship between sub-tenant and DOE.

The joint team also visited or observed several other sites and facilities, including the barge facility (ED-2), K-1415, K-1059, K-1416, K-1420 (to be leased after D&D to the contractor conducting the D&D), K-1098E, and the powerhouse area.

3.6.8 Conclusions

To the maximum extent possible, OSHA and DOE have attempted to reach agreement on the factual and evaluative issues germane to this report. In certain circumstances, however, DOE and OSHA do not completely agree on particular points. In those cases, differing viewpoints are reflected below.

3.6.8.1 Current Regulatory Coverage at Reindustrialized Facilities at ETTP

DOE-OR states that it does not have statutory authority for occupational safety and health over CROET or its subtenants. Instead, DOE's control over occupational safety and health conditions affecting the tenants' workers is limited to its contractual authority flowing from DOE's role as

landlord. The leases and subleases contain clauses requiring the tenant to comply with OSHA standards.

OSHA has not officially accepted jurisdiction of any of the reindustrialized facilities at Oak Ridge. Therefore, CROET and their subtenants are operating solely under landlord safety and health provisions as contained in their leases/subleases.

3.6.8.2 Protection of Employee Safety and Health at Reindustrialized Facilities

The DOE/CROET leases and subsequent CROET/subtenant subleases provide some mechanisms for resolving safety and health issues. DOE's influence is limited to its role as landlord, under the provisions of its lease with CROET. Subtenants have the opportunity to formalize their safety and health program responsibilities in their Safety and Health Plan and participate in the Safety and Health (S&H) Council as required by their subleases. At S&H Council meetings, subtenants have a forum to identify issues and share site information such as lessons learned.

As landlord, DOE-OR informs CROET of potential S&H hazards identified during routine walkthroughs of subtenant facilities. DOE-OR also evaluates the potential impact of identified potential hazards on site operations. CROET is responsible for communicating identified potential hazards and appropriate abatement activities to the subtenant. DOE-OR and CROET use provisions of the leases and subleases to ensure that appropriate tenant/subtenant actions are taken.

3.6.8.3 Information About the Condition and Status of Reindustrialized Facilities

DOE's Office of Worker Health and Safety (EH-5) has provided OSHA with data about DOE's actual and planned privatization actions that have generally included facility descriptions, information about past uses and hazards, and historical data. In the case of future reindustrializations, little is known about the future tenant and future operations. As a result, advance notifications generally would not have contained complete information. Since the average time between serious interest of a potential subtenant and the signing of a sublease is a short time (60 to 90 days), it may not be possible for EH-5 to provide OSHA with the information in advance.

Based on the walk-throughs, OSHA concluded that the information that had been previously requested and provided was sometimes out of date, inaccurate and/or incomplete. OSHA believes it needs this information to make a determination that proposed sites for transfer meet their transfer criteria. OSHA believes the results of activities conducted under this objective confirms its earlier position that it should conduct a site visit to ascertain the actual conditions of a privatized facility within an agreed-upon timeframe.

DOE believes that available safety data should be provided to OSHA and that general familiarization visits are appropriate prior to transfer. DOE believes, however, that visits to

ascertain hazards at each facility would be consistent with OSHA's authority once jurisdiction has been transferred.

3.6.8.4 Relationship Between the Reindustrialized Facilities and DOE Activities

Subtenants at the reindustrialized facilities are engaged in typical commercial enterprises. However, a few subtenants either sold their products to DOE prime contractors or provided essentially the same services before and after reindustrialization. In addition, several of the utility operations at ETTP have been reindustrialized, and continue to provide services to DOE and its contractors.

3.6.8.5 Security Issues

All reindustrialization subtenants are required to complete site-specific training and receive a site badge. OSHA compliance officers will need the same training and badges to access most areas. In facilities requiring security clearances, subtenants have obtained the appropriate security clearances and appropriate training. OSHA officials will also need security clearances to access areas which contain classified information, material or equipment. Section 3.4.2, Security Clearances, contains a detailed description of security clearance issues.

3.6.8.6 Hazards or Other Problems that Might Affect Transfer of Regulatory Jurisdiction to OSHA

As previously noted, the walk-throughs did not evaluate or characterize the radiological hazards at the reindustrialized facilities. Several facilities, including K-1401, contain residual radiological contamination introduced during former DOE operations. In DOE's opinion, all known contamination has been identified and controlled to reduce and eliminate harmful personnel exposures.

Where residual radiological (both removable and fixed) contamination is known, ORO conducts a risk assessment to ensure private sector employees are not subject to exposures in excess of established DOE criteria, to ensure that facilities are safe for private sector employees. Fixed contamination was removed in some areas to below DOE/NRC release criteria. In areas not meeting the DOE release criteria, DOE ensured compliance with appropriate controls and restrictions identified in 10 CFR 835, such as reporting/posting requirements.

In some cases, tenants provide decontaminating and salvaging activities under the terms of their subleases. In these cases, either DOE or NRC regulations apply. When decontamination work is performed under contract to DOE, DOE's 10 CFR 835 is followed and DOE regulates the work. When the decontamination is not done under contract to DOE, it is performed by contractors licensed by the NRC agreement state agency and subject to NRC's radiation exposure regulation at 10 CFR 20. Minor procedural difficulties between ORO and the state of Tennessee are being resolved.

OSHA's current standard for protection from ionizing radiation (29 CFR 1910.1096) is less protective than either the DOE or NRC regulations. OSHA has stated that it will not regulate radiological safety at reindustrialized facilities using a standard that is less protective than has heretofore been applied and enforced at DOE facilities. In addition, it is often difficult to ascertain which other regulators (DOE, Tennessee Department of Environment and Conservation, and/or EPA) have the responsibility for protecting private sector worker and public exposure to radiation at the facilities. For these reasons, OSHA concludes that it should not accept regulatory responsibility at reindustrialized facilities with residual radioactive contamination without a fully protective standard and clarity about the respective roles of regulators. On the other hand, DOE points out that the number of regulators has no significant impact on regulation. Issues can be clarified in an MOU as has been done at the USEC gaseous diffusion plants.

Two other issues emerged during the evaluation that are relevant to the transfer of jurisdiction over reindustrialized facilities from DOE to OSHA. First, as noted above, hazards were observed. If OSHA was to be the regulator of these facilities, it would expect these hazards to be abated in a timely manner. DOE's position is that it is the tenants' responsibility to abate these hazards. The team determined that some tenants had not been informed about all of the facility hazards present in the facilities. This points to the need for DOE to ensure tenants are aware of facility hazards and to consider them during lease negotiations. OSHA concludes that it may be appropriate to conduct a comprehensive inspection of a transferred facility within six months of transfer of jurisdiction to assure that the facilities meet modern standards of worker protection.

The second issue concerns the problems of a facility with multiple employers under different regulators. Based on the conditions at the reindustrialized facilities, a potential exists where an employer regulated by one regulatory authority creates a hazard and exposes employees of another employer who is regulated by a different authority over the hazard. It is possible that OSHA would have no jurisdiction over the contractor/tenant creating the hazards, and it is equally possible that the cited employer would have no or limited ability to abate or control the hazard. This can also be the case for other potential regulators at the reindustrialized facilities, e.g., DOE, the NRC, or the State. An example is the radiation decontamination activity currently occurring in major portions of the K-1401 facility. The Tennessee NRC agreement state agency also expressed similar concerns. In these situations, close coordination between the regulators will be necessary to avoid conflicting subtenant actions and to prevent or eliminate unsafe conditions.

3.6.8.7 Issues Affecting OSHA State Plans

The state of Tennessee Occupational Safety and Health Administration declined to participate in this evaluation. As a result, this issue was not explored in depth. The issues concerning state and federal authority that have been previously identified continue to be important, and are being addressed at the national level. This evaluation did not reveal any new issues with respect to state plan issues.

3.6.8.8 OR's Response to the September 1997 Facility Disposition Report

In September 1997, DOE's Office of Oversight (EH-2) issued a report entitled *Safety Management Evaluation of Facilities Disposition Program at the East Tennessee Technology Park*. The report expressed some concerns about how the program was addressing and mitigating hazards at a number of the facilities at the ETTP. ORO provided a list of its actions in response to the issues raised in the report. The list is attached to this report as Appendix E.

4.0 Report Authors

This report is a work product of the Pilot Core Group and does not represent Agency policy. The report provides views on issues that should be considered during a transition to external regulation of DOE worker safety and health. While the entire report was coordinated throughout all Core Group members, the following individuals contributed directly to the report. The report facilitators assisted the Core Group through editing and report coordination activities.

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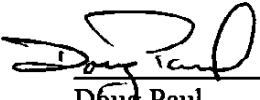

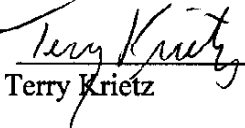
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ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
AFL-CIO	American Federation of Labor and Congress of Industrial Organizations
ANL-E	Argonne National Laboratory-East
ANSI	American National Standards Institute
ATF	Bureau of Alcohol, Tobacco and Firearms
ATI	American Technologies, Incorporated
ATLC	Atomic Trades and Labor Council
BJC	Bechtel Jacobs Company LLC
CFR	Code of Federal Regulations
CROET	Community Reuse Organization of East Tennessee
CSHO	Compliance Safety and Health Officer
D&D	Decontamination and Decommissioning
DEAR	Department of Energy Acquisition Regulation
DOE	Department of Energy
DOE-OR	Department of Energy, Oak Ridge Operations
EM	Environmental Management
ES&H	Environment, Safety, and Health
ETTP	East Tennessee Technology Park
FTE	Full-Time Equivalent
GOCO	Government-Owned, Contractor-Operated
HAZWOPER	Hazardous Waste Operations and Emergency Response
IGUA	International Guard Union of America
ISMS	Integrated Safety Management System
KBCTC	Knoxville Building and Construction Trades Council
LMER	Lockheed Martin Energy Research
M&I	Management and Integrating
M&O	Management and Operating
MOU	Memorandum of Understanding
NAPA	National Academy of Public Administration
NEC	National Electrical Code
NFPA	National Fire Protection Association
NORM	Naturally Occurring Radioactive Material
NRC	Nuclear Regulatory Commission
OCAW	Oil, Chemical and Atomic Workers
OMB	Office of Management and Budget
OMI	Operating Management International
ORNL	Oak Ridge National Laboratory
ORO	(DOE) Oak Ridge Operations
OSH Act	Occupational Safety and Health Act

OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Level
PPE	Personal Protective Equipment
PSM	Process Safety Management
RAC	Risk Assessment Code
REDC	Radiochemical Engineering Development Center
S&H	Safety and Health
TDEC	Tennessee Department of Environment and Conservation
TLV	Threshold Limit Value
TOSHA	Tennessee Occupational Safety and Health Administration
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
UPGWA	United Plant Guard Workers of America
USEC	United States Enrichment Corporation
VPP	Voluntary Protection Program
WSS	Work Smart Standards
Y-12	Oak Ridge Y-12 Plant